Direct Spinning Shows Promise . . . page 45

Textile World

AUGUST, 1959

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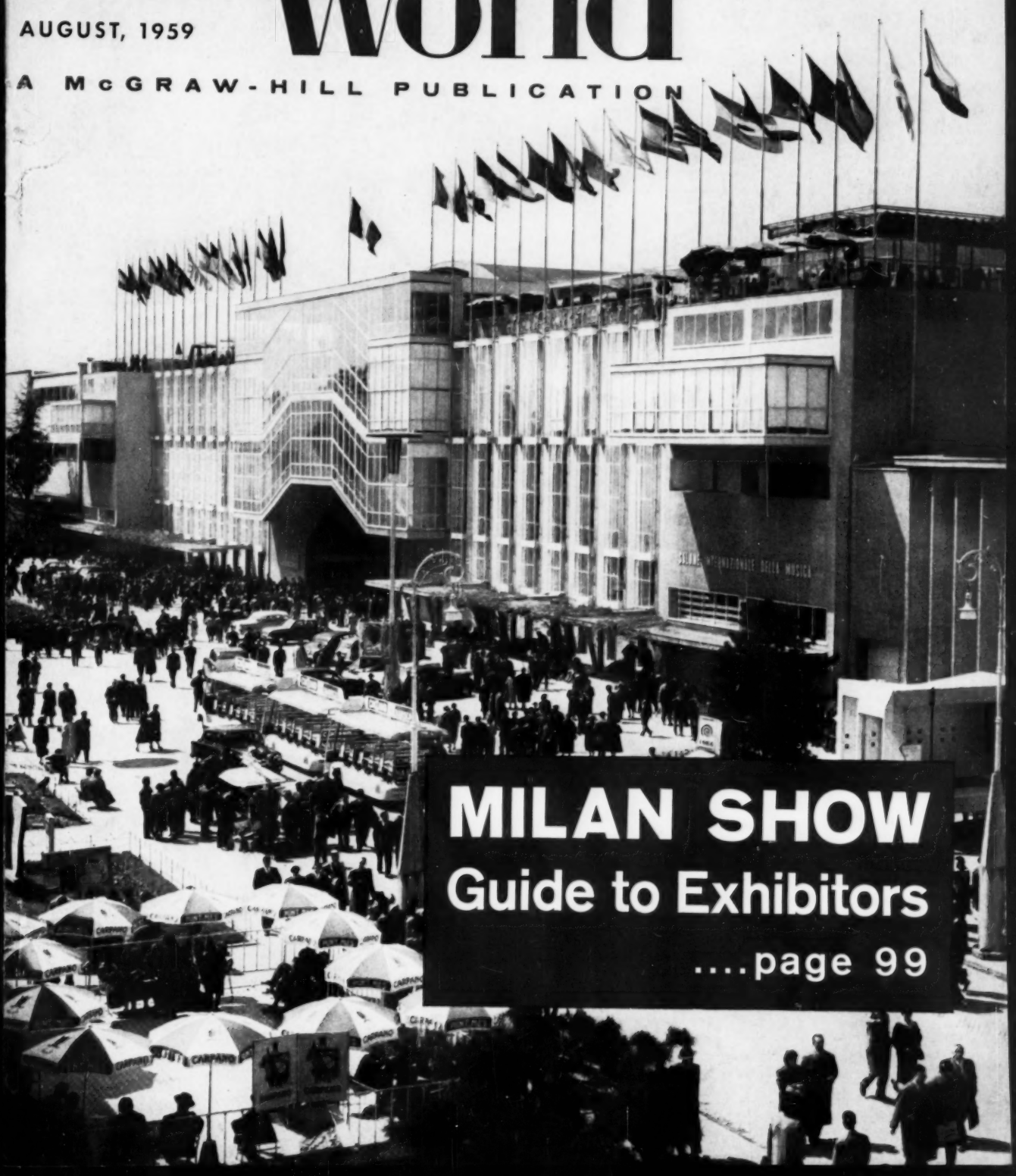
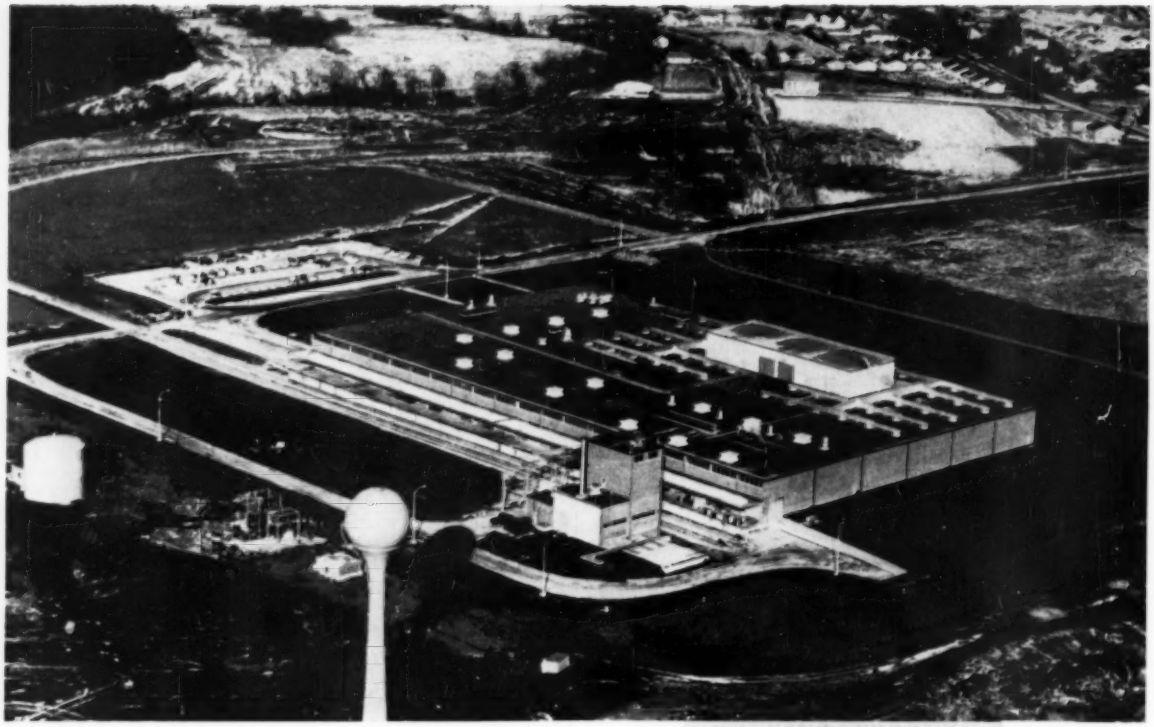


MILAN SHOW

Guide to Exhibitors

....page 99



NEW SOUTHERN FACTORIES INCREASE EFFICIENCY FOR JAMES LEES & SONS COMPANY

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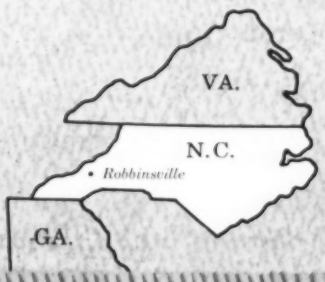

ROBERT AND COMPANY ASSOCIATES
Textile Engineering Division
ATLANTA

This Month in TEXTILE WORLD

August, 1959

Volume 109, No. 8

BUSINESS

Textile-Mill Sales Hit $15-Billion Rate. Latest-month sales hit $1,302-million, about 30% above the same month last year 3

Rising Mill Prices Boost Profit Margins . . . as business for the textile industry continues to improve 3

Year of Major Shows Starts Next Month. Major machinery exhibitions will be held in Milan, Italy, Atlantic City, N. J., and Greenville, S. C., by October 1960 4

Cotton-Textile Imports—the Battle Tempo Steps Up. The campaign to bring control of U. S. cotton-goods imports into the hands of the U. S. speeded up last month but met resistance. TEXTILE WORLD presents a roundup of the forces at work and their viewpoints 4

WASHINGTON—U. S. Hopes for Agreement To Cut Hong Kong Imports 5

HONG KONG—Exports Will Be Curbed Only To Stop U. S. Control 5

JAPAN—Japan Regulates Trading But Drives for World Markets 7

WASHINGTON—National Cotton Council Enters Textile-Imports Battle 7

WASHINGTON—U. S. Officials Claim New Cotton Subsidy Favors Mills 8

Extended Low-Duty Period Asked for British Woolens . . . that were en route to market or being readied for market when the change-over from 25% to 45% duty was reached 9

Textile World's Index and Monthly Indicators 10

MANAGEMENT

The "Give-It-Awayers" Again (Editorial) 39

Plan '59 To Modernize Now for Growth and Profits Goes Into High Gear 41

Analytical Training Method Trains Weavers Fast and Well. The system works so well with learner weavers that regular production weavers have also been trained. 43

Help Make the Incentive System Work. An incentive system can never be a substitute for good supervision, but good supervision can and should materially help the operation of the incentive system 129

MANUFACTURING

. . . CARDING & SPINNING

Fiber and Yarn Research Spurs Interest at Cotton Clinic. Reports briefed here cover effect of ginning on manufacturing costs and on chemically treated fabrics; how short fibers harm yarn and fabric; how coarse and fine cottons can be blended .. 50

. . . SPINNING

Direct Spinning—Test Frame at Coats & Clark Shows Considerable Promise . . . for spinning high-quality thread yarn directly from drawing sliver 45

. . . WEAVING

New Filling-Handling System Cuts Batteryhand Cost 40% 49

Slashing Colored Warps Requires Special Equipment 55

. . . KNITTING

Lockstitch Lever Keeps Welt End From Unraveling. Here's how one hosiery mill solved a problem caused by untwisted yarn 131

. . . SEAMING

Checklist for Inspectors Reduces Sewing Defects . . . by showing where and when to inspect goods and how many to inspect for adequate control 56

. . . QUALITY CONTROL

Tension Analysis—A New Tool To Solve Many Textile Problems. Here's a way to improve quality and production in most textile operations 46

Please turn the page

CHEMICAL TREATMENT AND FINISHING

Section Contents Page 59
Textile Chemicals 61
New Dyes and Chemicals 64
Adaptability Pays Off for Lanett Bleachery 66
Why Color Matchers Differ 67
How To Choose a Pigment-Printing System 71
Preparation and Bleaching—5. How Preparation Methods Developed 74
The Basic Chemistry of Dyes and Dyeing—VI. Vat Dyes—Their principal types. Soluble variations. Basic application methods 85

DEPARTMENTS

. . . MANAGEMENT
Editorial 39
Pointers for Supervisors 129
Textile Business 3

. . . TECHNICAL
Kinks & Short-Cuts 131
Mill Maintenance 168
Questions & Answers 20
Textile Chemicals 61

. . . NEW PRODUCTS
Equipment & Supply News 141
Fibers, Yarns, Fabrics 121
New Dyes and Chemicals 64
New Literature 150

. . . NEWS
News About Men 172
New About Mills 17
News About Suppliers 169
Obituary 174

. . . GENERAL
Calendar 18
Reader Service 183
Advertisers' Index 182

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TEXTILE BUSINESS

Textile World

AUGUST • 1959

Textile-Mill Sales Hit $15-Billion Rate

The big news in textile business last month was the surging sales that drove the annual sales rate well above $15-billion. In TEXTILE WORLD's Monthly Indicators (p. 10), latest-month sales hit $1,302-million, about 30% above the same month last year.

Inventories at the mill dipped slightly, down to $2,465-million; but the sizzling sales pace drove the inventories-to-sales ratio down to 1.89, the lowest in the present 15-months-old business comeback.

Production went down slightly in the normal July-holidays pattern. From a revised June level of 118 on the Index Chart (p. 10), production slid to 115, which put it level with May and with the 1956 high.

With the summer shutdowns now over, production should start another rapid climb to a year's high in the fall.

Rising Mill Prices Boost Profit Margins

The profit picture in the textile industry continued to improve last month under the impetus of booming sales, firm or rising prices, and production committed months ahead.

Eighty-square print cloth, generally sold up well into next year, was turning a nice profit at 19½¢—2⅛¢ better than the 17⅜¢ a year earlier.

Combed cottons, particularly broadcloth and lawn, were under pressure; and prices advanced. Forty-inch 136x60 broadcloth moved from 28¢ to 29¢, and 40-in. 88x80 combed lawn moved from 23¢ to 23½¢.

The cotton-yarn market, a little slower to feel prosperity than the cloth market, was sailing smoothly last month, with prices steady and demand building up for fourth-quarter production.

Rayon producers tagged another 3¢ and 4¢ a pound on their filament yarns, with Du Pont, American Viscose, and Industrial Rayon all announcing similar increases. Finer deniers were raised 4¢ a lb. and coarser deniers 3¢ a lb. That's the second increase this year. The first raise, 3¢ a lb., came in March.

•

Profits should improve steadily throughout the rest of this year and should remain satisfactory in early 1960.

In an analysis last month of the production and profits outlook for cotton and rayon-and-acetate mills, Standard & Poor's reported:

• Cotton mills

"Cotton mill earnings in the first half of 1959 showed a good gain over the small year-earlier results. . . . However, with wider production gains now in prospect, and future shipments to be made at advancing prices, substantially higher earnings are in prospect through early 1960."

Indian Head Mills' Profits Rise 68% in First Half

Earnings at Indian Head Mills rose 68% in the fiscal six months ended May 30 of this year over the same period last year.

Earnings this year amounted to $1,200,000 on sales of $27,157,000. That is a profit of 4.4% of sales and amounted to $1.93 per share of common stock.

In the same period last year, earnings of $786,000 on sales of $19,855,000 amounted to 3.9% of sales and $1.15 per share of common stock (adjusted for a stock split).

James E. Robison, president, announced that in this fiscal year the purchase on Feb. 3, 1959, of The Linen Thread Co. increased Indian Head's assets from $16-million to more than $24-million and net working capital from $6.9-million to about $12-million.

Also in February of this year Indian Head split its stock two-for-one, raising the number of common shares outstanding to 493,400.

Philippines Join Program To Increase Cotton Use

MANILA—The first joint promotion aimed at increasing the use of cotton in the Philippines was made last month by the Textlie Mills Assn. of the Philippines and Cotton Council International.

The event was the visit to Manila of the U. S. Maid of Cotton.

The Philippines program is getting off to a quick start. Agreement to the joint program was announced by Cotton Council only in mid-June, less than a month before the Maid stopped off on her round-the-world tour.

Twelve other countries, 10 of them European, are already participating in the Council's world program. The Philippines is the third Asiatic country to join the efforts. Japan and India are already participants.

Projects to stimulate the use of cotton include cotton weeks, general education and publicity, fashion shows, market research, and helps to retail clerks.

The Council will help the Philip-

• Rayon-and-acetate mills

"Earnings of synthetic-fiber fabric mills have been improving steadily because of better demand at firmer prices, but an increasing return is expected through early 1960 on rising average prices."

Year of Major Shows Starts Next Month

A year of major textile-machinery exhibits gets under way next month when the 3rd International Textile Machinery Exhibition swings open its doors at Milan, Italy (p. 99). With over 600 exhibitors from 12 countries, the show is expected to draw textile men from all over the world.

After a lull of only eight months, the American Textile Machinery Exhibition—International, sponsored by the American Textile Machinery Assn., will open for business in Atlantic City on May 23, 1960.

More than 80% of the 300,000 sq. ft. of floor space in Atlantic City's Convention Hall has already been assigned, and it is expected than more than 400 exhibitors will display more than $20-million worth of machinery and equipment.

Five months later, the 21st Southern Textile Exhibition will get under way at Textile Hall, Greenville, S. C., on Oct. 3, 1960.

Thus, within a span of 14 months, beginning next month, every major textile-machinery show regularly scheduled will be held except the Textile Recorder Exhibition at Manchester, England.

Cotton-Textile Imports— The Battle Tempo Steps Up

The campaign to bring control of U. S. cotton-goods imports back into the hands of the U. S. [TEXTILE WORLD, June, p. 5] speeded up last month.

• **Hong Kong** was under pressure to control its imports, which are rising at a spectacular rate.

• **Japan** shied further away from pushing the North American market too far by suspending exports of certain made-up goods to Canada.

•

And in the U. S., strong forces threw their weight into the battle in Washington.

• **The American Cotton Manufacturers Institute,** spearheading the drive, was calling attention to imports from countries other than Japan. Apparel imports from Hong Kong, for example, were cited as $670,000 in 1956, $5,762,000 in 1957, and $17,331,000 in 1958.

In the first quarter of this year, they were up to about $10-million—an annual rate of $40-million, and more than double the amount in 1958. That's a four-year increase from $670,000 to $40-million.

• **The National Cotton Council** appealed to Secy. of Agriculture Benson to curb textile imports in the interest of U. S. cotton farmers as well as mills.

• **Influential mill men individually** joined the campaign. Donald Comer, of Avondale Mills, a past president of ACMI, made public a letter he wrote to Henry Kearns, Asst. Secy. of Commerce, in which he said, "I consider we are in a fight for the life of the textile industry in this country."

But there are two sides to the battle.

For world political reasons, the U. S. government is hesitant to clamp the lid on imports too tight. And the exporting Asian countries, growing industrially, like the taste of the U. S. market they've had.

Looming big in the world picture is the U. S. cotton farmer, very strong politically and protected by law and U. S. policy.

In the following articles in this section, TEXTILE WORLD presents a roundup of the forces at work last month and their viewpoints—

WASHINGTON

U.S. Hopes for Agreement To Cut Hong Kong Imports

The Commerce Dept. is hopeful of working out an informal agreement with textile producers in Hong Kong that will reduce exports to the U. S. substantially.

Commerce officials say an agreement was almost reached last month but came apart when terms were misreported and misquoted in Hong Kong. Now, however, talks are back on the track.

Any such agreement would be less formal even than the Japanese voluntary export-quota program. It would be made directly with Hong Kong mills and shippers, not through the Colony's government.

Asst. Secy. of Commerce for International Affairs Henry Kearns made a trip to the Far East recently to study exports from that area. He returned convinced that shipments from Hong Kong originate there and that there is no evidence of transshipments from Japan or Red China to support speculation to this effect.

HONG KONG

Exports Will Be Curbed Only To Stop U.S. Control

The textile industry of this country will submit to an export-quota agreement only as a last-ditch attempt to forestall U. S.-imposed restrictions, industry leaders told TEXTILE WORLD last month.

Any restrictive plan will certainly draw fire from the large and vocal garment section of the Hong Kong trade, which is on record as being opposed to any controls. But spinners and weavers, many of whom have booked U. S. orders through next March, are not quite so vehemently opposed to a quota agreement. Influential industry leaders now fear that U. S. restrictions are inevitable

pines organize its program, train staff, and adapt its efforts to the promotion pattern that has worked so well in the U.S. and European countries.

Cotton Scored 1958 Gains On Competitive Fibers

Cotton gained on its competitive fibers in 1958, according to a report by the research section of the National Cotton Council. Total cotton use was down only 1% from 1957, compared to a loss of 7% by other fibers measured in terms of cotton.

In the three major classifications of use—apparel, household, and industrial—cotton's share rose from 45% of the total in 1957 to 46% of the total in 1958.

Here's how cotton made out in each of the three categories—

• **Apparel**—In this use, cotton had an increase in the number of bales used and also increased its market share from 60% in 1957 to 61% in 1958.

• **Household**—Cotton had a drop of 11,000 bales in this use but held its share of the market level at 50%.

• **Industrial**—The use of cotton dropped more sharply in industrial use than in household use, but the share of the market filled by cotton increased from 25% in 1957 to 26% in 1958.

The five biggest uses of cotton in 1958 were, in order—

• Men's and boy's trousers: 723,000 bales
• Men's and boys' shirts: 620,000 bales
• Sheets: 443,000 bales
• Towels and toweling: 372,000 bales
• Drapery and upholstery: 347,000 bales.

Men's Garment Cuttings Well Ahead of 1958

Cuttings of men's garments in the first five months of 1959 ran well ahead of the first five months of 1958, the Clothing Manufacturers Assn. reported last month.

By major types of garments the increases were—

• Men's suits (all fabrics and weights), up 20%
• Sportcoats, up 53%
• Topcoats and overcoats, up 12%
• Pants (all fabrics), up 49%.

Department-Store Sales Ran 9% Ahead in 1st Half

Department stores, which sell one-third of the wearing apparel sold in the U. S., increased their total sales 9% in the first six months of 1959 over the same period in 1958, according to Federal Reserve Board figures released last month.

All 12 FRB districts of the U. S. showed increases, which ranged from 4% in the New York district to 11% in the San Francisco district.

Increases for the first half of the year in the 12 districts were:

	(%)
Boston	5
New York	4
Philadelphia	8
Cleveland	8
Richmond	7
Atlanta	8
Chicago	10
St. Louis	9
Minneapolis	6
Kansas City	9
Dallas	9
San Francisco	11
U. S.	9

Mill Failures Remain Down

Mill failures and liabilities ran only a little over one-half the rate in 1958 during the first six months of this year, Dun & Bradstreet reported last month.

In the 1959 Jan.-June period, there were 32 failures with $3,658,000 liabilities, compared to 50 failures with $6,275,000 liabilities in the same 1958 period.

For the month of June alone, there were eight failures with $1,512,000 liabilities, compared to 14 failures with $2,338,000 in June 1958.

U. S. Acetate and Rayon Up, Imports Are Up More

U. S. fiber producers shipped 564.9-million lbs. of acetate and rayon yarn in the first six months of 1959 —a gain of 24% over the first half of 1958, the Textile Economics Bureau announced.

In June, shipments were 98-million lbs.—a gain of 2% over May and 32½% over June 1958.

and feel that they will fare better in the end if they push their voluntary plan through in spite of opposition.

The United States since December has had an adverse trade balance with Hong Kong for the first time since World War II, and in April the U. S. surpassed the United Kingdom as Hong Kong's principal buyer. This trade-pattern change is due almost entirely to first-quarter clothing exports. Of $26.2-million worth of garment exports, roughly $10-million worth, or 40%, went to the United States.

Leading U. S. purchases during that period were:

Slacks, shorts, jeans, trousers (not knitted)	$3.3-million
Women's blouses (not knitted or embroidered)	1.6
Shirts (not knitted)	0.89
Outerwear (not knitted)	0.83
Nightwear (not knitted)	0.8
Brassieres	0.75
Skirts, dresses, frocks (not knitted)	0.31

Although they can no longer quote an unfavorable trade balance as an argument against U. S. import quotas, HK textilers still argue that the restrictions will be unfair because—

- **Hong Kong purchases 45.3% of her raw cotton from the U. S.**
- **The colony needs her textile-sales dollars for purchases from the U. S.**
- **One-third of Hong Kong's total registered labor force is employed in the textile industry.** Directly and indirectly, one-half of Hong Kong's total labor force is dependent on the industry.

●

Hong Kong has attempted some diversification (sailor hats, beach hats, skirts, men's shorts, etc.) since the February visit of U. S. Asst. Secy. of Commerce Henry Kearns. But this diversification has not prevented an increase in the export of items (brassieres, blouses, skirts, play clothes, pajamas, etc.) that are depressing to the U. S. industry.

Local textilers talk vaguely of finding new export markets to reduce the pressure on the United States. They are participating in the Vienna Trade Fair and have made overtures to Brazil.

But such talk seems wishful thinking. "Wherever we go, the cry for quotas goes up," one manufacturer said, citing Australia, South Africa, Canada, Germany, and France as recent examples.

The consensus of top industry leaders here is that Hong Kong's only choice is to concentrate on quality instead of quantity, to modernize through better machinery and better production methods, and to continue the search for new markets regardless of the seemingly hopeless situation.

As one large mill owner put it: "We don't want to be dependent on one market. We had our experience with Lancashire, and that was enough!"

●

[**NOTE:** On special assignment, TEXTILE WORLD's editor in Hong Kong, Stanley Rich, investigated the U. S. textile-industry belief that much of Hong Kong's U. S.-bound textiles comes from Red China. Stan reports—

"There is no foundation for this belief. Of Hong Kong's first-quarter clothing exports to the U. S., amounting to $26.2-million, re-exports from all sources represented only 2.3%, or $0.6-million worth. And the bulk of these re-exports was made up of Japanese cloth cut and sewed here into garments, not Red China cloth."—Editor].

JAPAN

Japan Regulates Trading But Drives for World Markets

Textiles are still Japan's leading export industry, and the Japanese government is making strong moves to protect and regulate it in an increasingly difficult world market.

In particular, the government and the industry are anxious not to cause any new upset in the North American and European areas.

- **Last month the government for the first time voluntarily suspended exports** of certain made-up cotton and rayon goods to Canada.
- **The government is urging "orderly" marketing in overseas markets** and is demanding that cutthroat practices that dropped textile prices as much as 30% last year be eliminated.
- **In May of this year government agencies, textile manufacturers, and traders** started a system of regular meetings to air problems and seek cooperative solutions.
- **Experts are getting down to long-range studies** of changes in basic market patterns, and the government plans to tighten up inspection to boost the quality of Japanese exports.

But many industry leaders have no great confidence that these long-range plans will work when the chips are down.

"We must export to survive," they say; and they frankly admit that it will be hard to control cutthroat practices when economic pressure is as strong again as it was last year.

Low-cost merchandise forms the bulk of U. S. demand for Japanese textiles, and a large volume is certain to continue to move into that market, as well as into the Canadian and European markets.

Underdeveloped areas, especially Southeast Asia and Africa, offer only limited trade possibilities. Besides being economically weak, these markets are being heavily invaded by Red Chinese textiles at prices that even Japan cannot cope with.

Japan has no intention of getting out of the textile-export business. The government, while insisting on more-orderly practices, is ready to help textile manufacturers and traders in their drives for greater world markets.

Anticipated measures include—

- Tax concessions on export earnings
- Low-interest loans for export production facilities
- Improved insurance protection for exporters
- Intensified market research overseas
- Measures to stabilize the industry, especially among medium-size and small cotton manufacturers.

WASHINGTON

National Cotton Council Enters Textile-Imports Battle

Domestic mills have won the official support of the National Cotton Council in their running campaign for tighter restrictions

By types of fiber and yarn, June shipments were:

High-tenacity viscose—28.4-million lbs., 2% over May and 67% over June 1958.

Regular- and intermediate-tenacity rayon — 15.2-million lbs., 7% above May and 21½% above June 1958.

Acetate yarn—20.3-million lbs., 2½% above May and 1% over June 1958.

Rayon staple and tow—34.1-million lbs., 1% under May but 40% over June 1958.

•

Imports of rayon staple in the first five months of this year were up 48%, more than double the increase of domestic rayon staple in the same period.

In the Jan.-May period, imports of rayon staple amounted to 48,609,000 lbs., **about 22% of the total U. S. rayon-staple consumption in that period.**

Major suppliers of these imports were West Germany and Austria, followed by Italy, Sweden, and France.

•

Fiber imports of other types included:

Noncellulosic staple—in the first five months of 1959, 1,493,000 lbs., compared to 601,000 lbs. in the same period of 1958.

Rayon waste—in the first four months of 1959, 2,165,000 lbs., compared to 1,712,000 lbs. in the same 1958 period.

Noncellulosic waste—in the first four months of 1958, 2,353,000 lbs., compared to 1,292,000 lbs. in the first four months of 1958.

WORLD BRIEFS . . .

"Outer Seven" Countries To Offset Common Market

STOCKHOLM — Seven European countries outside the Common Market began discussion last month on forming an economic-cooperation unit called the Outer Seven. Agreement is expected to be ready for signing about Nov. 1.

The purpose of the pact is twofold: first, to compete with the Common Market on cutting tariffs and, second, to work more effectively toward a free-trade area that will incorporate both the Outer Seven and the Common Market.

The Outer Seven countries are Britain, Sweden, Norway, Denmark, Switzerland, Austria, and Portugal.

Finland wants to make it eight, but close ties with Russia may keep her out.

•

British Scrapping Plan Now Ready for Action

LONDON—The British government last month gave first details of compensating mills for scrapping obsolete equipment according to the aid plan announced in late April.

The payment plan has been worked out only for spinning, twisting, and weaving equipment. If there is enough justification for it, a plan will be ready by fall for the finishing branch of the industry, the Cotton Board said.

There will be three types of payment: premium, standard, and discount, with a bonus for early action.

• **Standard rate** will be paid for scrapping equipment that was in operation on April 24, 1959, the day after the announcement of the aid plan. Payment will be 84¢ a mule-spindle equivalent, between $1.40 and $1.96 a twisting spindle, and between $126 and $224, according to width, for a loom.

• **Premium payment** will be 25% above standard payment and will be paid to mills going completely out of business. In addition, these payments will be tax-free and the mills can sell their equipment for scrap.

• **Discount payment** will be 20% to 25% less than the standard rate and will be paid on equipment that was idle on April 24.

Any mill applying before Aug. 25 for participation in the plan will be paid an additional 5%.

But the government requires certain qualifications for the plan to be into effect at all—

—**The industry must commit itself by Sept. 30** to scrap at least 6-million equivalent spinning spindles, 400,000 doubling spindles, and 45,000 looms.

—**Surplus capacity must be scrapped** between April 24, 1959, and March 31, 1960.

•

Argentine Cotton Crop Off 40.5% This Year

BUENOS AIRES—The Argentine Board of Rural Economy estimated the yield of cotton at only 101,500 on imported cotton-textile fabrics and apparel.

The Council has appealed to the Dept. of Agriculture to back a new plea to the Tariff Commission under Section 22 of the Agricultural Adjustment Act. The reasoning for new import restrictions under this section is that imports—in this case, imports of textiles and fabrics—are damaging the Department's domestic cotton-price-support program.

Sen. John Stennis (D.-Miss.), a leading cotton spokesman in Congress, applauded the Council's appeal in a senate speech and urged Agriculture Secy. Ezra Taft Benson to file the case with the Tariff Commission. Other legislators are adding their weight.

●

This means that U. S. mills are gaining more industry-wide backing in their drive for import restrictions on textile products, particularly from the Far East.

Traditionally, cotton growers and shippers have benefited from the export markets and have opposed trade curbs that might work against their overseas sales. The government's export-price subsidy program has until recently helped to maintain that traditional position.

Now, growers and shippers are taking the mills' economic problems to heart. The Council is concerned over mills' purchases of cotton in this country, as well as U. S. export sales, which have been dropping off lately for a number of reasons.

●

Agriculture Dept. staffers question whether the Council's case can be proved on the technical grounds that textile imports are hurting domestic raw-cotton support programs. The Council argues that imports of textiles and products cut the domestic raw-cotton market by roughly as much as they bite into mills' productive capacity.

This point is hard to prove, government cotton experts say. Even if the Council's contention that the bulk of imported textiles are made from foreign rather than U. S. cotton can be shown, it may not necessarily mean that mills' decreased purchases of U. S. cotton can be laid directly to the pinch of foreign-fabric imports. Domestic buying practices, the competition of synthetic fibers, U. S. cotton-production increases, and other factors must also be accounted for.

WASHINGTON

U.S. Officials Claim New Cotton Subsidy Favors Mills

A tricky piece of arithmetic is being used by officials of the Dept. of Agriculture to try to prove that the new 8¢-per-lb. subsidy on export cotton is in U. S. mills' favor.

The arithmetic is considerably less than crystal clear, but the main points seem to be—

• **The present subsidy** is 6½¢ a lb. on the U. S. support price. Take 1-in. Middling at 31½¢ for an example. The U. S. cotton that U. S. mills pay support price (31½¢) for is sold abroad by exporters at 25¢. To make up for the 6½¢ difference, the government gives the exporters 6½¢ worth of cotton, also to be sold at 25¢.

• **This subsidy will increase to 8¢ a lb.**, lowering the price of export cotton to 23½¢.

• **But on this year's cotton crop, the support price (and the price to U. S. mills) will drop about 3½¢ to about 28¢.** That will make the difference between the U. S. price of 28¢ and the export price of 23½¢ only 4½¢ a lb., compared to the present difference of the full 6½¢-a-lb. subsidy.

So the net result, officials point out, is that the price of cotton to U. S. mills will be 2¢ a lb. nearer world prices. On same grades and staple lengths the two prices may be even closer together, Department officials say.

This arithmetic is figuring heavily in Secy. Benson's reaction to the National Cotton Council's appeal for cotton-goods-imports curbs.

Agriculture officials figure that the new pricing structure will help boost U. S.-cotton exports 185%, to 5-million bales in the 1959-60 crop year. They predict that the world cotton situation will move in favor of the U. S. over the next few years and that there will be a bigger drain on the U. S. cotton surplus.

The Agriculture Dept. figures this situation will help U. S. cotton farmers more than curbing imports to increase U. S. mill consumption.

Extended Low-Duty Period Asked for British Woolens

WASHINGTON—British wool-fabric mills and their U. S. importers are still trying for special consideration in exporting wool goods to the U. S.

Before the 1959 change-over point for wool-goods imports from 25% duty to 45% duty was announced, Britain and France tried to persuade the U. S. to allocate imports by countries, with the base period fixed to favor them. For the previous two years, Italy and Japan had increased their shares of the 25%-duty goods at the expense of Britain and France.

The U. S. declined to allocate the 25%-duty volume (5% of U. S. domestic production averaged for the preceding three years) by countries.

In April, Pres. Eisenhower announced that the 25%-duty goods in 1959 would amount to 13.5-million lbs. After that point was reached, duty would go to 45%. The break-point came in May.

British mills and U. S. importers say that the Italians "flooded" the U. S. market between the time the change-over point was announced and the time it went into effect, beating British goods to market.

The British and their U. S. representatives are now asking the U. S. to make an exception of the British goods that lost out in the race. In a petition to the State Dept's Committee for Reciprocity Information, they are asking that the British woolens still be allowed to come into the U. S. at 25% duty.

They claim in the petition that 443,000 lbs. of goods were already en route to market and another 559,000 lbs. were being readied for market—a total of 1,002,000 lbs. They are asking that the break point be extended from May to June 15.

tons this year, compared with 170,500 tons of last year.

The major part of the 40.5% drop in gross yield has taken place in the Argentine Chaco, which last year produced 63.7% of the total crop. The loss reflects the heavy damage by the boll weevil.

The Argentine textile industry is looking to Brazil for the cotton it will lack. Brazil is believed to have a good cotton crop this year and could supply the Argentine deficit under the present bilateral agreement.

•

Israel Builds Up Its Textile Industry

TEL-AVIV—A 29,000-spindle cotton-yarn spinning mill is under construction at Beer-Sheba, south of Tel-Aviv.

The mill will cost about $870,000 and is being built as a private venture by a Swiss investor.

The new plant is part of the government's program for boosting cotton-yarn production in order to provide jobs for workers and to build up exports.

The Labor Ministry is establishing a school in Beer-Sheba to train workers for the expanding textile industry.

•

Red China Exports Four Cotton Mills

HONG KONG—Communist China and the government of Ceylon announced completed negotiations late in June for a cotton spinning, weaving, and finishing plant to be built in Veyangoba, about three miles south of Colombo.

The made-in-China equipment will include 62 spinning frames of 416 spindles each to spin an average of 39s cotton; 648 automatic looms; bleaching, dyeing, and printing equipment; and air conditioning.

Capacity will be 10-million sq. yds. on two-shift operation. Products will be women's dress goods made from Ceylon's medium-length-staple cotton.

At present Ceylon has only one mill, a privately owned, totally obsolete mill built about 90 years ago.

The new Ceylon mill will be the fourth textile mill Red China has exported. The first, still under construction, went to Cambodia, the second to Burma, and the third to Yemen. All are financed by Red China loans.

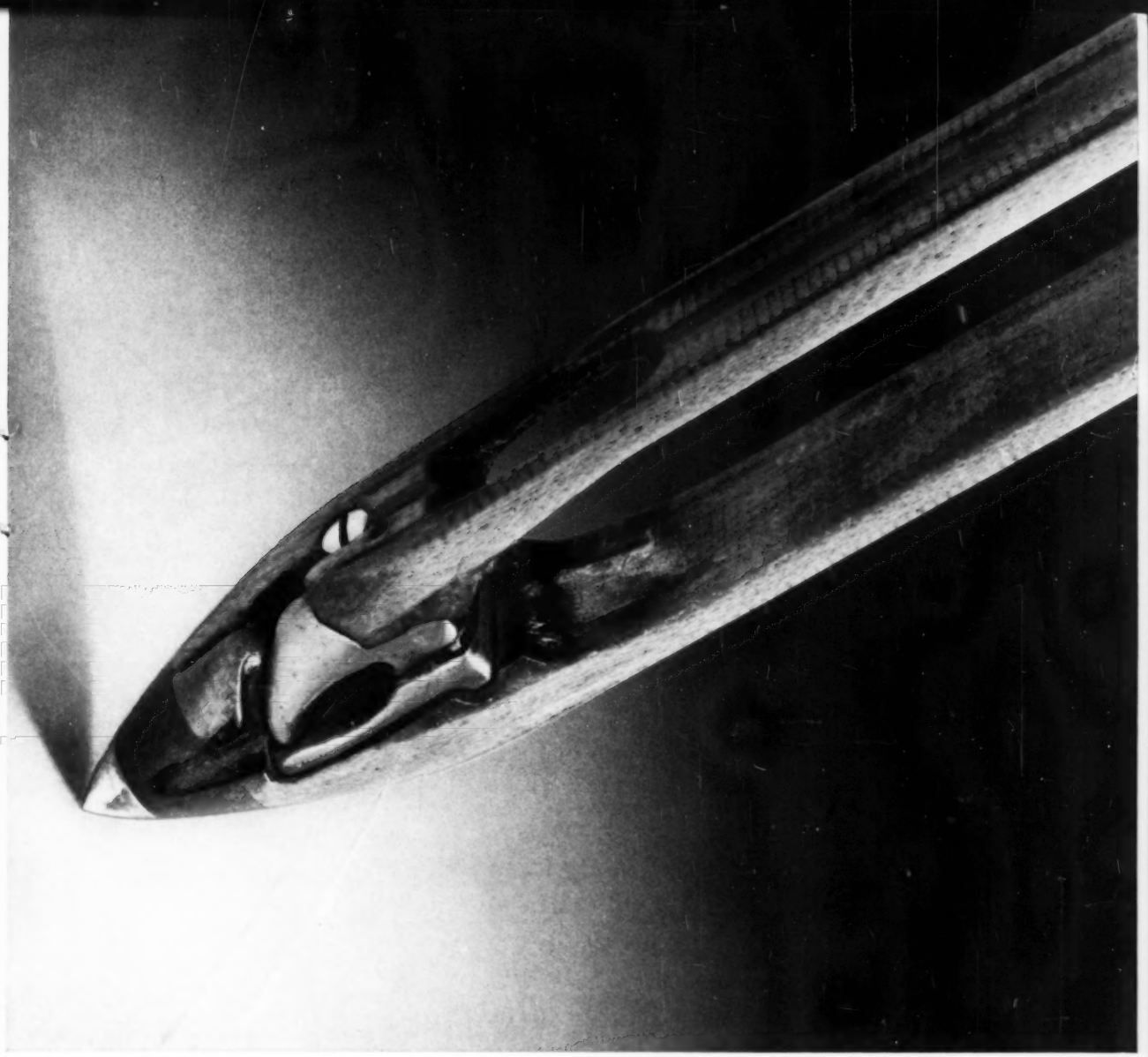
Index of manhours worked in the textile industry adjusted for changes in productivity

Textile World's Monthly Indicators

	Latest Month	Previous Month	Year Ago
Textile World's Index (1954=100)	**115**	**118**	**101**
Employment (thousands) B.L.S.	975.0	965.5	930.2
Production Workers (thousands) B.L.S.	883.4	874.2	839.9
Weekly Earnings B.L.S.	$64.46	$63.99	$57.98
Hourly Earnings B.L.S.	$1.58	$1.58	$1.51
Weekly Hours Worked B.L.S.	40.8	40.5	34.4
Production Index (1947-49=100) F.R.B.	115	117	94
Wholesale Price Index (1947-49=100) B.L.S.	94.4	94.1	93.3
Manufacturers' Sales (million $) Commerce	1,302	1,253	1,025
Manufacturers' Inventories (million $) Commerce	2,465	2,482	2,572
Inventories-to-Sales Ratio	1.89	1.98	2.60
Exports (million $) Commerce	87.1	84.0	130.6
Imports (million $) Commerce	107.0	97.6	70.3
Stock Price Index (1941-43=10) Standard & Poor's	30.26	29.47	21.19
Failures (number) Dun & Bradstreet	8	2	14

National Economic Indicators

	Latest Month	Previous Month	Year Ago
Industrial Production (1947-49=100) F.R.B.	155	153	130
Consumer Price Index (1947-49=100) B.L.S.	124.1	123.9	123.7
Wholesale Price Index (1947-49=100) B.L.S.	119.6	119.9	119.2
Population (millions) Census	174.4	174.1	171.3
Unemployment (millions) Census	4.0	3.4	5.4
Employment (millions) Census	67.3	66.0	65.0
Personal Income (billion $) Commerce	382.9	381.3	353.4



266,000 Miles... a recent performance record achieved by a Draper Tru-Mold Shuttle. This shuttle was in continuous operation for over 20,800 hours and was still in running condition when removed from the loom. While these figures are impressive, they are even more amazing if we consider the number of times the shuttle was boxed and thrown. A quality shuttle coupled with proper care and handling make records of this type possible. For shuttles that last longer ... give better performance... use Draper Tru-Mold Shuttles.

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MORE THAN 3½ MILLION SPINDLES NOW EQUIPPED WITH ROBERTS HIGH DRAFT

ROBERTS SPINNING NEWS

PUBLISHED BY ROBERTS COMPANY SANFORD, NORTH CAROLINA

WM-2 SANFORD, NORTH CAROLINA, U. S. A. 1959

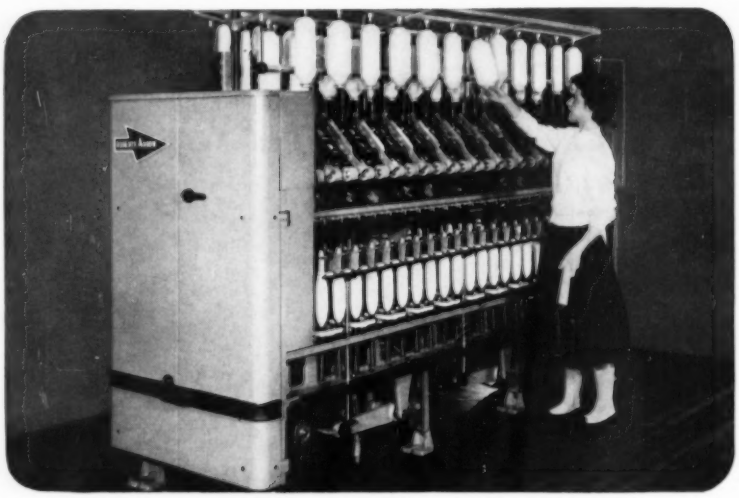
ARROW WM-2 LONG FIBER SPINNING FRAMES OFFER WIDEST YARN MAKING VERSATILITY

A dynamic program of new product design, advanced styling and aggressive merchandising is underway by all segments of the Textile Industry.

Knitting yarns of higher quality and greater interest are being called for in worsted, synthetics and blends. Finer weaving yarns up to 2 ply 80's are being called for and a great many blends are currently being explored. The longer fibers are in wide demand and the next few years should see a substantial boom in this field.

The demand for high bulk knitting yarns and the finer weaving yarns plus all of the newer fabric effects being created require fiber lengths from 3 to 8 inches long.

ARROW WM-2 frames are suitable for making yarns in any fiber length from 1½ to 8 inches. They provide great versatility in handling 100% synthetics, blends of synthetics, 100% worsteds and blends of worsted with synthetics in this range. Better quality yarns with greater evenness, bigger package sizes and higher production speeds are produced on ARROW frames.



- Spins yarn from any natural or synthetic fiber or any blend.
- PermaSet Drafting handles any fiber length from 1½ to 8 inches
- No roll setting changes needed at any time
- Great versatility for changing yarn numbers, twist, draft, ring size, and spindle speed
- Drafts as high as 24 on worsted, 60 on synthetic
- Produces yarn with better evenness and greater breaking strength
- Ball bearing top and bottom rolls eliminate all lubrication in drafting zone
- Almost ideal spinning conditions from delivery roll to spindle
- Runs at higher front roll, traveler and spindle speeds
- Reduces ends down by more than 50%
- Puts twice as much yarn on the bobbin as older frames
- 12-inch bobbins reduce winding costs
- Very rugged, most durable machine ever built for yarn spinning
- Frame is built in the wide-stance 36-inch width
- Uses ball bearings at every moving, turning or oscillating motion
- Substantially lowers electric power consumption
- AeroCreel for single or double roving
- Frame arranged for practical application of overhead cleaning and vacuum floor sweeping

Roberts ShortFlo System for Making Long Fiber Yarns

Roberts Company offers complete technical service in adapting its ShortFlo System for the production of long fiber yarns. This includes the complete yarn manufacturing process starting with tow converters, blending machines, pin drafting, roving frames, spinning frames, winders and twisters.

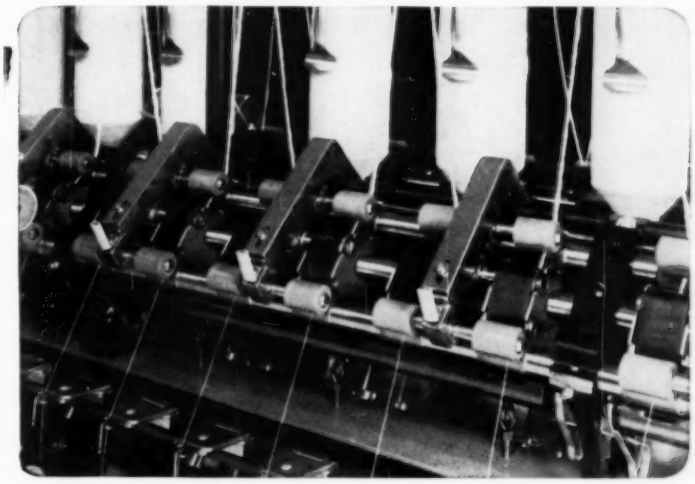
Where mills have existing equipment, full consideration is given to utilizing it whenever possible. Or, if a new long-fiber program is planned, all machinery can be specified, and the complete yarn organization set up.

The ShortFlo System for making long fiber yarns requires a minimum number of processes. Many doublings are provided to insure exceptionally good blending of fibers, improved evenness and better strength.

THE MOST SENSIBLE ANSWER TO GADGET-FREE TOP ROLL SUSPENSION

ROBERTS *PosiWate* SUSPENSION SYSTEM

PosiWate Ball Bearing Top Roll Suspension eliminates all cap bars and the need for top roll oiling. All three lines of top rolls have double-row ball bearings; heavier weighting can be handled when required. Weight distribution is positive. Hooks, short springs and other gadgets are not used. Roberts Ball Bearing Bottom Rolls with EvenGrip Fluting are also available.



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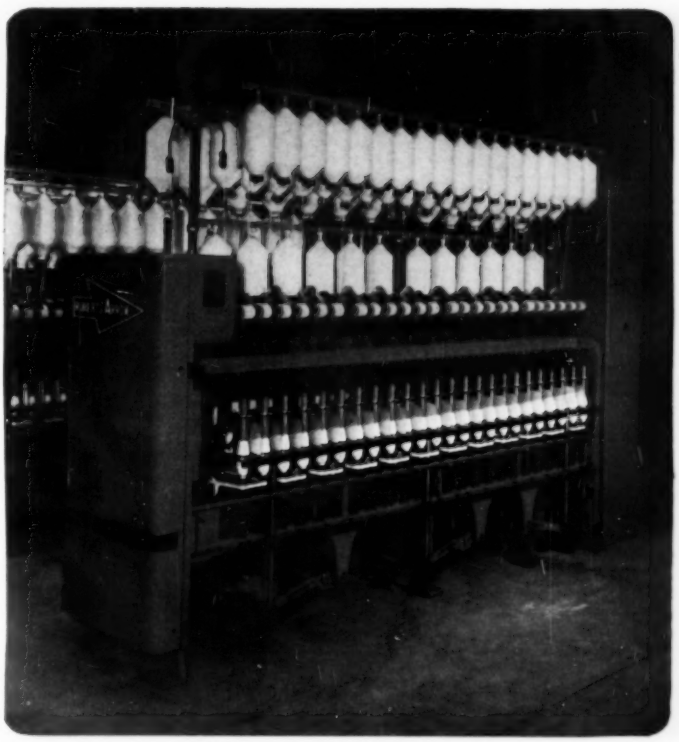
ROBERTS ARROW

MODEL M-1

and changeover modernization for any make of frame



ARROW M-1 SPINNING FRAMES

for cotton and for synthetics 1½ to 3¼ inches long

PosiWate Top Roll Suspension

UnaRing Balloon Control

EvenGrip Fluted Bottom Rolls

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Double-Apron High Draft System

UnitVac Power-Suction Cleaning

Roberts All-Ball-Bearing Head

Unitized Sectional Frame

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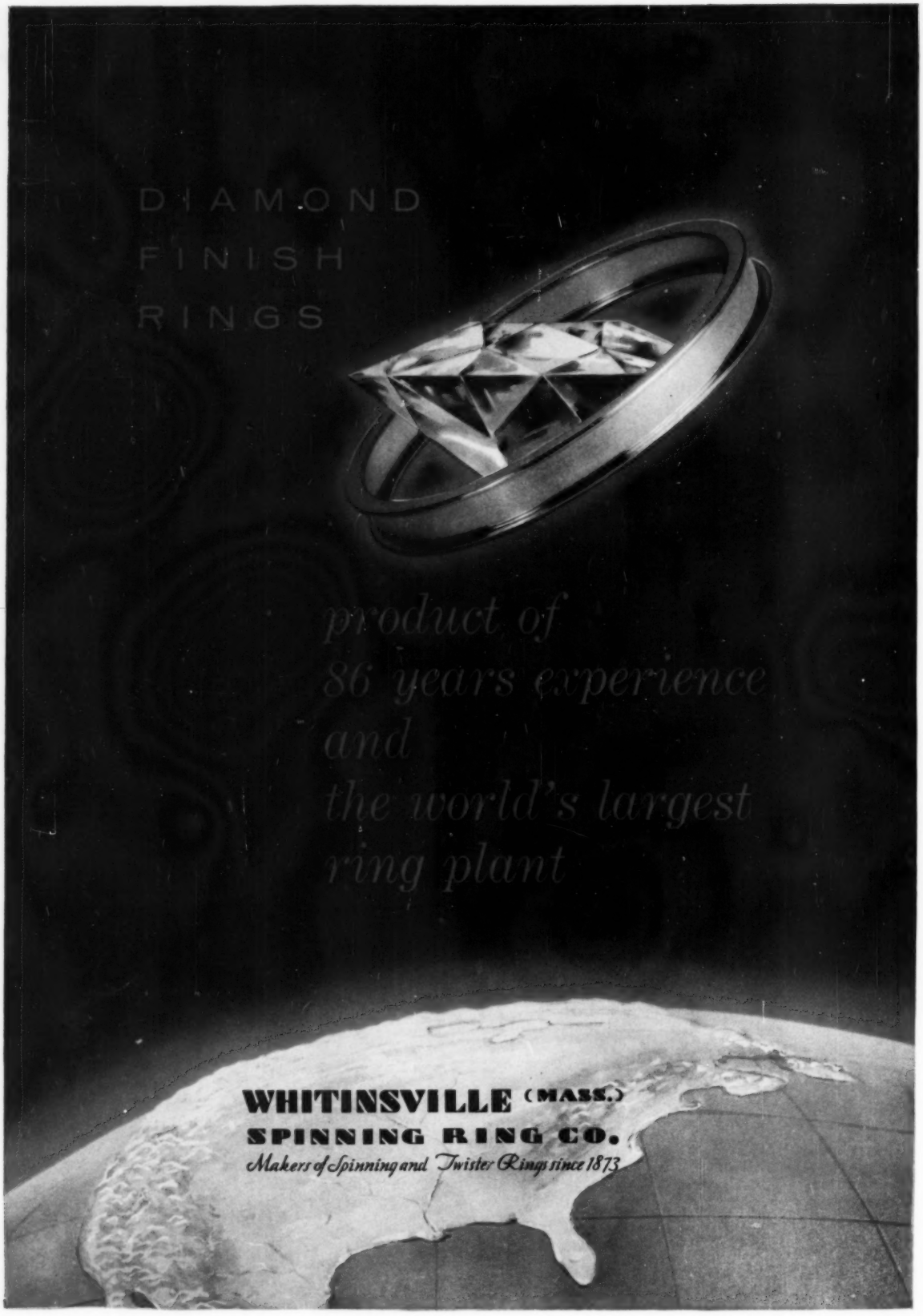
Avenida Reforma 915A
Puebla, Pue.

ROBERTS COMPANY

SANFORD, NORTH CAROLINA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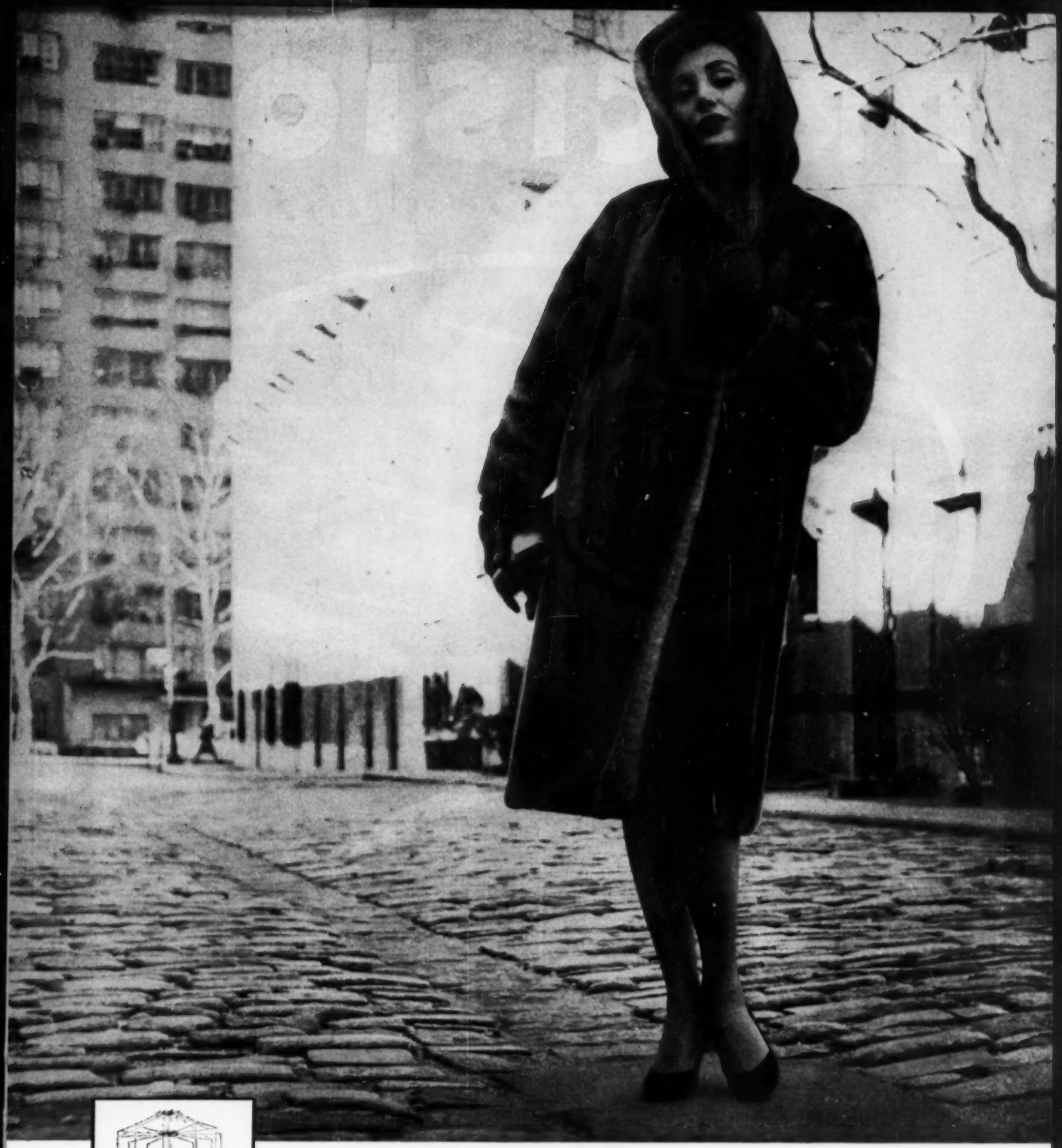

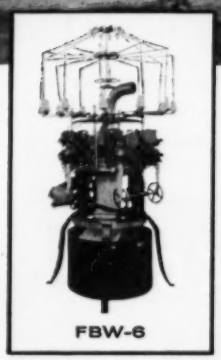

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"Elegant" . . . . . the only way to describe the luxurious coat fabrics produced on Wildman Jacquard "Hi-Pile" knitters. • *"Versatile"* best describes the capabilities of this unique machine. With a range of fabrics from glamorous outerwear to industrial coverings, the Wildman Jacquard "Hi-Pile" knitter is a sound investment. • For complete information write:

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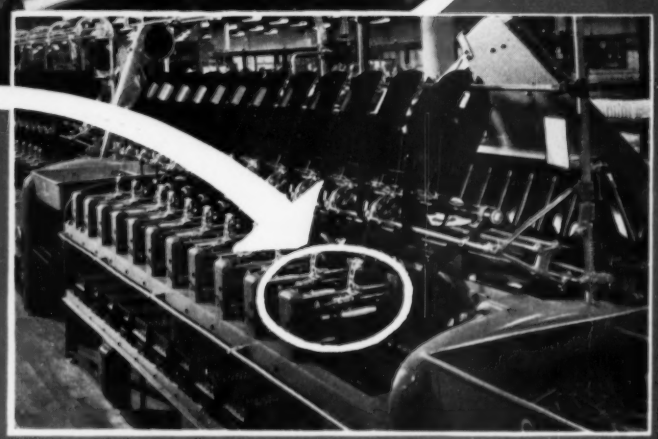

☆ **COMPENSATING TENSION**—Bobbin Tension variation caused by package variation is held to a minimum.

☆ **TAIL AVOIDER**—Tail at start up is cut off short and tucked under first few turns of feeler bunch.

☆ **ROTARY YARN GUIDE DRUM**

1. Delicate handling of yarn.
2. Uniform tension from full diameter to nose.
3. No erratic strokes because no reciprocating parts to wear loose.

☆ **FEELER WHEEL BOBBIN BUILD**

1. All bobbins same diameter regardless of yarn count variations.
2. Layer-lacking eliminates ridges and makes non-sloughing bobbins.

☆ **YARN END**—Yarn end on a full bobbin is always cut off 2" long and remains at tip of bobbin—no backwinding of end.

☆ **NO PIECE QUILLS**—Each spindle stops at break or run out and end can be tied up and restarted.

☆ **Precision pinboarded in sequence.**

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THE TERRELL MACHINE CO., INC.

CHARLOTTE, N. C.

Brantford Cordage Co. Ltd., Brantford, Ont., has been bought by Davis Leather Co., Newmarket and Toronto, Ont., for $2,989,547. Shareholders of Davis Leather have approved changing the company's name to Tancord Industries Ltd.

Carleton Woolen Mills, Rochdale, Mass., has started a $750,000 expansion program. The company will build a 20,000-sq.-ft. plant and expects to occupy it by the end of the year. The old plant will be used as a storage area. Additional machinery and equipment will also be bought.

Carolina Lace Corp., Robbins, N. C., a newly formed company, has started limited production of allover and band laces in its new 14,000-sq.-ft. building costing $100,000.

Consolidated Trimming Corp., New York, N. Y., is building a $1½-million plant between Union and Buffalo, S. C.

Dixon Weavers, Inc., Hickory, N. C., is a newly chartered corporation to make furniture fabrics. The incorporators are Joseph B. Dixon, Maxine Eckard, and G. D. Hovey, all of Hickory.

Goodall Vinyl Fabrics, Reading, Mass., has been formed as a division of Burlington Industries, Inc., Greensboro, N. C. This division will be responsible for the manufacture and sales of vinyl fabrics. Its sales offices will be located in New York City.

Grace Cotton Mill, a division of Reeves Bros., Inc., Rutherfordton, N. C., will be reactivated for production of vinyl-coated Coverlight materials. The company also plans to work in other areas of developments in special plastic coatings at this location. The plant will be known as Reeves Bros., Inc., Grace Plant. Products will be marketed through the company's Vulcan Rubber Products Div., New York, N. Y. The plant is being modified to accommodate special production equipment, and concrete floors are being installed in some areas. Other areas are being set aside for controlled laboratory work.

Hadley-Peoples Mfg. Co., Siler City, N. C., will build an addition to the present plant and will install new machinery. The company plans to add 30 more people to the staff when the expansion program is completed.

Jackson Mills, Wellford, S. C., has started a $1-million expansion and improvement program with completion expected about late spring 1960. Additions will be made in the slashing and spooling areas. Fourteen carding machines will be added, and changes are scheduled for drawing and other departments. The Wellford plant manufactures specialty fabrics for sportswear and other outerwear uses.

Kayser-Roth Corp., New York, N. Y., has bought controlling stock of Phoenix Hosiery Co., Milwaukee, Wis. Phoenix Hosiery will be operated as a separate division. Its personnel will be retained and will work under Frazier MacIver, president of Phoenix.

Kelly Dyeing & Finishing Co., Charlotte, N. C., has been bought by Marvin G. Widenhouse, owner of Midland Hosiery Mills, Midland, N. C. The plant will be operated as Midland Dyeing & Finishing Co. The firm will specialize in finishing stretch-yarn leotards and seamless and full-fashioned hosiery.

Linn Mills Co., and Corriher Mills Co., Landis, N. C., have announced plans for the organization of a new dyeing and finishing company, Corlin Processing Co., Inc. The new company will be operated as a wholly owned subsidiary of both companies. The companies will build a 20,000-sq.-ft. plant and will install new package-dyeing equipment. Production will begin about the first of January. The estimated cost of the new construction and machinery is $750,000.

George C. Moore Wool Scouring Mills, North Chelmsford, Mass., has been bought by Gilet Wool Corp., Lowell, Mass., and will be operated under the name of Gilet Wool Scouring Corp.

Newland & Co., Galt, Ont., and the worsted-yarn division of Harding Carpets, Ltd., Guelph, Ont., have agreed to merge.

Norwich Mills, Clayton, N. C., is building a 10,000-sq.-ft. addition and will use it for finishing men's sweat shirts.

Penn Dye & Finishing Co., Pine Grove, Pa., is planning to build a $100,000 plant for processing man-made-fiber knitted fabrics and blended fabrics.

Thrift Dye Works, Inc., a division of Allen Knitting Mills, Inc., Thrift, N. C., is expanding its facilities to increase monthly production from 600,000 yds. of cloth to 1-million yds.

Trio Knitting Mill, Inc., Mount Airy, N. C., has moved into a new two-story brick building. The building has 12,000 sq. ft. of floor space.

Vanette Hosiery Mills, Dallas, Tex., has announced that a local investment group has acquired controlling stock. J. O. Davis, formerly president, and F. W. Burnett, formerly vice president, have retired. Harker Collins has been promoted to president.

Warley Worsted Mills, Inc., Farnumsville, Mass., is moving back to Lowell and will occupy an entire floor in the Hub Hosiery Mills' building at 12 Perkins St.

Warrenton Woolen Co., Torrington, Conn., has been bought by Brown Bros., West Swanzey, N. H.

Woonsocket Laurens Corp.'s worsted-yarn spinning plant, Laurens, S. C., has been bought by Elmvale Worsted Co., Inc., a South Carolina corporation. Production-supervisory personnel from Elmvale Worsted Co., Pittsfield, Mass., will be employed by the newly acquired company. Some of the equipment in the Pittsfield plant will be used in the Laurens plant.

CALENDAR

September

AATT, Della Robbia Room, Vanderbilt Hotel, New York, N. Y., Sept. 2

Carded Yarn Association, annual convention, The Cloister, Sea Island, Ga., Sept. 10 & 11

Fiber Society, Inc., fall meeting, Princeton, N. J., Sept. 11 & 12

AATCC, Southeastern Section, Ida Cason Callaway Gardens, Pine Mountain, Ga., Sept. 12

3rd International Textile Exposition, Milan, Italy, Sept. 12 to 21

Combed Yarn Spinners Association, annual convention, The Cloister, Sea Island, Ga., Sept. 17 & 18

AATCC, South-Central Section, Hotel Patten, Chattanooga, Tenn., Sept. 19

Northern Textile Association, annual meeting, Wentworth-By-The-Sea, Portsmouth, N. H., Sept. 23 & 24

AATCC, Western New England Section, Blake's Restaurant, Springfield, Mass., Sept. 25

AATCC, Niagara Frontier Section, Niagara Falls, Ont., Sept. 25

AATCC, Piedmont Section, Barringer Hotel, Charlotte, N. C., Sept. 25 & 26

American Gas Association, Textile Processing Symposium, Sedgefield Inn, Greensboro, N. C., Sept. 28 & 29

October

Textile Quality Control Association, fall meeting, Grove Park Inn, Asheville, N. C., Oct. 1 & 2

Textile Operating Executives of Georgia, fall meeting (slashing and weaving), Hightower Textile Building, Georgia Institute of Technology, Atlanta, Ga., Oct. 3

Chemical-Finishing Conference, sponsored by the National Cotton Council, Mayflower Hotel, Washington, D. C., Oct. 7

AATT, Della Robbia Room, Vanderbilt Hotel, New York, N. Y., Oct. 7

N. C. Textile Manufacturers Association, annual convention, Carolina Hotel, Pinehurst, N. C., Oct. 8 & 9

Southern Textile Methods & Standards Association, fall meeting, Clemson House, Clemson, S. C., Oct. 8 & 9

AATCC, annual convention, Sheraton-Park and Shoreham Hotels, Washington, D. C., Oct. 8 to 10

North Carolina Textile Manufacturers Association, annual meeting, Carolina Hotel, Pinehurst, N. C., Oct. 8 & 9

Alabama Textile Operating Executives, fall general meeting on carding and spinning problems, Langdon Hall, Auburn, Ala., Oct. 10

AATCC, Northern New England Section, Lexington Inn, Lexington, Mass., Oct. 16

Textile Education Foundation, Inc., annual meeting, A. French Textile School, Georgia Institute of Technology, Atlanta, Ga., Oct. 17

AATCC, Mid-west Section, Bismark Hotel, Chicago, Ill., Oct. 24

Institute of Textile Technology, Technical Advisory Committee and Board of Trustees, fall meeting, Charlottesville, Va., Oct. 27 & 28

November

AATT, Della Robbia Room, Vanderbilt Hotel, New York, N. Y., Nov. 4

December

AATT, Della Robbia Room, Vanderbilt Hotel, New York, N. Y., Dec. 2

AATCC, Northern New England Section, joint symposium with ASME Textile Engineering Div., Smith House, Cambridge, Mass., Dec. 4

1960

April

American Cotton Manufacturers Institute, annual meeting, Americana Hotel, Bar Harbor, Fla., April 6 to 9

May

American Textile Machinery Exhibition, Atlantic City, N. J., May 23 to 27

June

Southern Textile Association, annual convention, Grove Park Inn, Asheville, N. C., June 23 to 25

October

21st Southern Textile Exposition, Textile Hall, Greenville, S. C., Oct. 3 to 7

AATCC, national convention, Sheraton Hotel, Philadelphia, Pa., Oct. 6 to 8

New Fundamental Chemical Discovery Creates A

BETTER SIZE FOR SYNTHETICS

New noncongealing Mira-Film Acetate Gum—developed especially for synthetics—gives noticeably superior adhesion. Forms clear, tough, flexible film that reduces warp stops, shedding, fuzz balls. As much as 2% better weaving efficiency demonstrated in actual mill tests!

Now, after over two years of intensive research, the A. E. Staley Mfg. Co. announces a new concept in the sizing of acetate, viscose, and other man-made fibers—through the use of Mira-Film Acetate Gum. Made by an exclusive process, so unique that a basic process patent has been applied for, Mira-Film is available in a *complete* range of viscosities.*

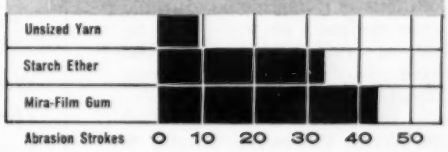
Mira-Film is particularly outstanding in applications with spun synthetics and their blends. For example, its chemical affinity for acetate yarns results in noticeably superior adhesion. And Mira-Film forms a tough, flexible film with increased abrasion resistance. Mill tests on a 90/10 Viscose/Acetate blend produced a 1% to 2% improvement in weaving efficiency.

More effective protection greatly improves weaving efficiency. Reduces breakage, shedding, fuzz balls and matting on drop wires . . . virtually eliminates thin spots. Cuts costly down-time.

Staley's exclusive development sets a new high, too, in uniformity . . . permits a degree of process control heretofore unattainable. Thus, Mira-Film Gum has minimum variation in viscosity or other physical properties, from bag to bag or from carload to carload.

Why not get all the facts about new Mira-Film Gum? For further information, see your Staley Textile Representative at the branch office nearest you or write today to: A. E. Staley Mfg. Co., Decatur, Ill.

ABRASION RESISTANCE TEST



*Mira-Film is one of a series of new products with a broad spectrum of characteristics, made possible by this new Staley development.

Compare The New Mira-Film Gum With Your Present Starch Size!

1. Completely noncongealing
2. Lower pasting temperature
3. Can be used at lower size box temperatures (120° F)
4. Paste is long and stringy
5. Faster cooking—only 30 minutes required at normal concentration
6. Requires wax additive only
7. Can be made in a full range of viscosities

A. E. STALEY MFG. CO., DECATUR, ILL.

Branch Offices: Atlanta • Boston • Chicago • Cleveland • Kansas City
New York • Philadelphia • San Francisco • St. Louis

NEW FAIRBANKS-MORSE

Portable Platform Scale

MODERN FUNCTIONAL STYLING

- reads quickly and clearly under all lighting conditions!
- moves easily through narrower aisles!
- stays accurate and sensitive under roughest conditions!

Designed for your most exacting requirements—built for years of heavy-duty use—this new Fairbanks-Morse Model 1124A Portable Platform Scale helps speed your operations through faster, more accurate weighing!

Note the big, clear beam design that promotes quicker reading—the new square weights for easier handling! Check the new concealed wheels, the compact overall width—important for fast handling in congested areas. Notice the absence of check rods, to eliminate binding. From top to bottom this is a handsome, durable scale designed to use—built to last—a worthy successor to the hundreds of thousands of famous Model 1124 Scales proven throughout industry! Capacity 1000 lbs. Write Fairbanks, Morse & Co., 600 South Michigan Avenue, Chicago 5, Illinois, for new Model 1124A Catalog.

See Sweet's Plant Engineering File for full line of F-M Scales.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

SCALES • PUMPS • DIESEL, DUAL FUEL AND GAS ENGINES • ELECTRIC MOTORS
GENERATORS • COMPRESSORS • MAGNETOS • HOME WATER SYSTEMS

QUESTIONS & ANSWERS

Do you need help on a technical problem? TEXTILE WORLD is at your service in helping solve problems in yarn manufacturing, weaving, knitting, dyeing, finishing, and other textile operations. A large staff of mill men, consultants, and other experts are available for authoritative answers. Send your problem to the Editor, Questions and Answers, TEXTILE WORLD, 201 E. Coffee St., Greenville, S. C.

Covers or Different Dyes May Help Level Selvages

Technical Editor:

How can we overcome the problem of overdyed edges on acetate swimsuit fabrics? We dye these goods in open jigs with acetate dyes. (1451)

Probably the best cure would be to totally enclose your jigs. Overdyed selvages are caused by the temperature differential between the exposed selvage and the body of the goods. Some acetate colors exhaust better at 140° F. than they do at 180° F. If these colors are present in the dyebath, the selvages of goods being dyed in open jigs will overdye because they are cooler than the rest of the goods.

If it isn't practical to cover your jigs, try acetate dyes that are less sensitive to fabric temperature variation. Your supplier should be able to suggest a number of such dyes that would meet your fastness requirements.

Waffle Cloth Made on 26-Gauge Raschel Machine

Technical Editor:

Could you give me some information waffle weave for thermal underwear? I'd like to know what kind of machine is used, the gauge of the machine, kind of yarn used, number of yarn, turns per inch, and cost of manufacture. (1447)

Waffle cloth for thermal underwear usually is made on a raschel machine with two guide bars and a double needle bar, 26 gauge (American) or 24 gauge (German).

Most of the cloth is made from 22s singles cotton yarn with the twist

whether your product is knitted or woven

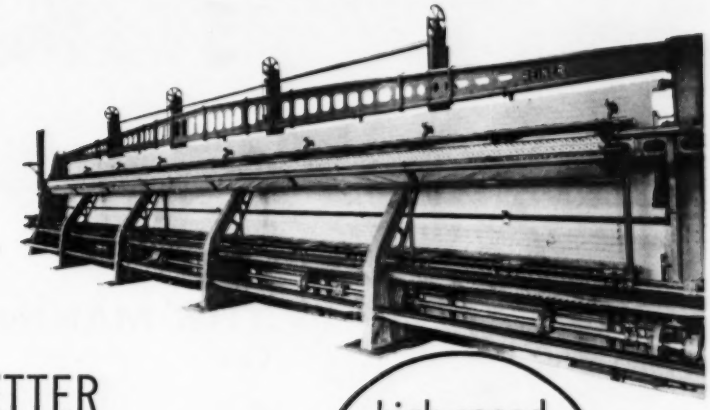
Schiffli Embroidery

ADDS

- style
- value and
- profits

and makes

- a GOOD line BETTER



high speed, fully automatic REINER 10 and 15 yard SCHIFFLI EMBROIDERY MACHINE

These Reiner machines are the answer for progressive mills looking for new marketing ideas, new outlets, increased sales. They give you added style at lowest cost; they are easy to operate and maintain because they are fully automatic; they need only watchers, not skilled operators. A pneumatic "brain" controls its functions, and oiling is done by automatic means. Their finely balanced motions permit exquisitely detailed patterns.

•

Schiffli embroidery enhances the sales appeal of:

dresses — blouses — lingerie — shirts — ties — curtains — scarves — handkerchiefs — table cloths — caps — sportswear — sheets — pillow cases — insignias and many other items.

The Reiner Automatic Schiffli Embroidery Machines are the most advanced in design and motion control; they are faster than any other machine . . and for that very reason there are more Reiners in place than all other makes combined. We have been pioneers in the American embroidery field since 1903.

Ask for facts and details . . . or let us know whether you wish to visit an embroidery shop to see for yourself.

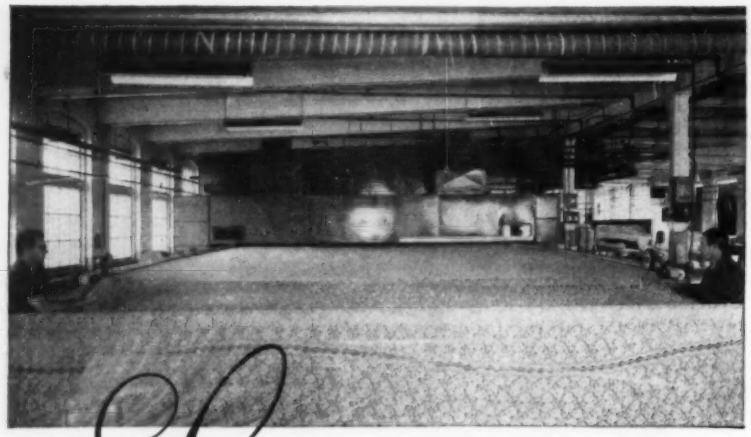
ROBERT REINER, INCORPORATED

telephone: UNion 7-0502 - *from New York City call:* LOngacre 4-6882

Only 10 minutes from Times Square by direct bus.

WEEHAWKEN, NEW JERSEY

—AN HONORED NAME IN TEXTILE MACHINES SINCE 1903—



Lace IN THE MAKING

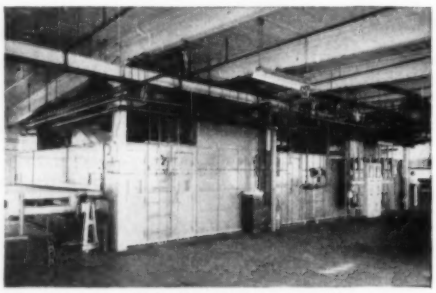
...the "Key" finishing unit being the special A & G 2-zone Drying and Setting Unit

Hope Valley Dyeing Corp., West Warwick, R. I., had a problem. Within the existing building space being used for making lace, they wanted to

1...get greater production

2...modernize to be able to meet the growing demand for laces made of the synthetic as well as cotton fibers

3...have sufficient flexibility and range in the Drying and Setting Oven to be able to change production schedules, as desired



The design of the Drying and Setting Oven presented a major problem not only because of the limited building space available but because of the changed finishing demands. The job was turned over to A & G Engineers. The unit installed is a single pass 2-zone 50 foot long gas-fired machine to handle webs up to 21 feet in width at temperatures up to 450°. Operating speeds range from 12 to 25 yards per minute on this unit, which has a 4" thick housing to prevent heat radiation into the room and has special air locks at each end of the oven to prevent the heated air escaping into the room. Special nozzle design and air distribution are providing uniform drying and setting across all webs, regardless of width, while assuring proper hand and quality.

This installation is a typical modernization program where A & G Engineers have been of immeasurable assistance. Perhaps you have a similar project where we can be of help.

THE MIDLAND-ROSS GROUP OF COMPLEMENTING SERVICES

ANDREWS & GOODRICH

Division of Midland-Ross Corporation

336 ADAMS STREET, BOSTON 22, MASS.

Southern Representatives:
McSpadden & Scantland, Charlotte, N. C.

normally used for this number.

Market price fluctuates greatly with the price of raw material, labor, etc. The knitting cost, including warping, is about 45¢ per lb. at the present time for average-size orders. For large orders of 50,000 lbs. or more, the price for commission knitting is about 35¢ per lb.

Winder Worm Gears Wear Out Too Fast

Technical Editor:

We are winding heavy yarns on our Schweiter winders, and the worm gears wear out too fast because of incorrect adjustment of the yarn-guide stroke. The instruction manual adjustments do not seem to help. Can you tell us what to do? (1455)

A yarn guide stroke that is too long produces a hard cop with heavier gripping action on the spindle. This condition wears the worm gears.

The yarn-guide stroke should be set as short as possible with the aid of an ammeter (one ampere per graduation) connected to the electric motor that drives the winder.

Set the yarn-guide stroke to the exact size of the cop to be wound. When the winder is started, the ammeter should record normal amperage. If the ammeter shows a gain of more than one ampere at the time of doffing, the yarn-guide stroke is too long and should be reduced until the reading is less than one ampere.

Shortening the yarn-guide stroke will tend to reduce the diameter and hardness of the cop. Readjustment of the thread guide may be necessary to compensate for the loss of hardness.

The yarn-guide stroke is ideally adjusted when the ammeter needle shows no deflection at the time of doffing. A reading should be made every day.

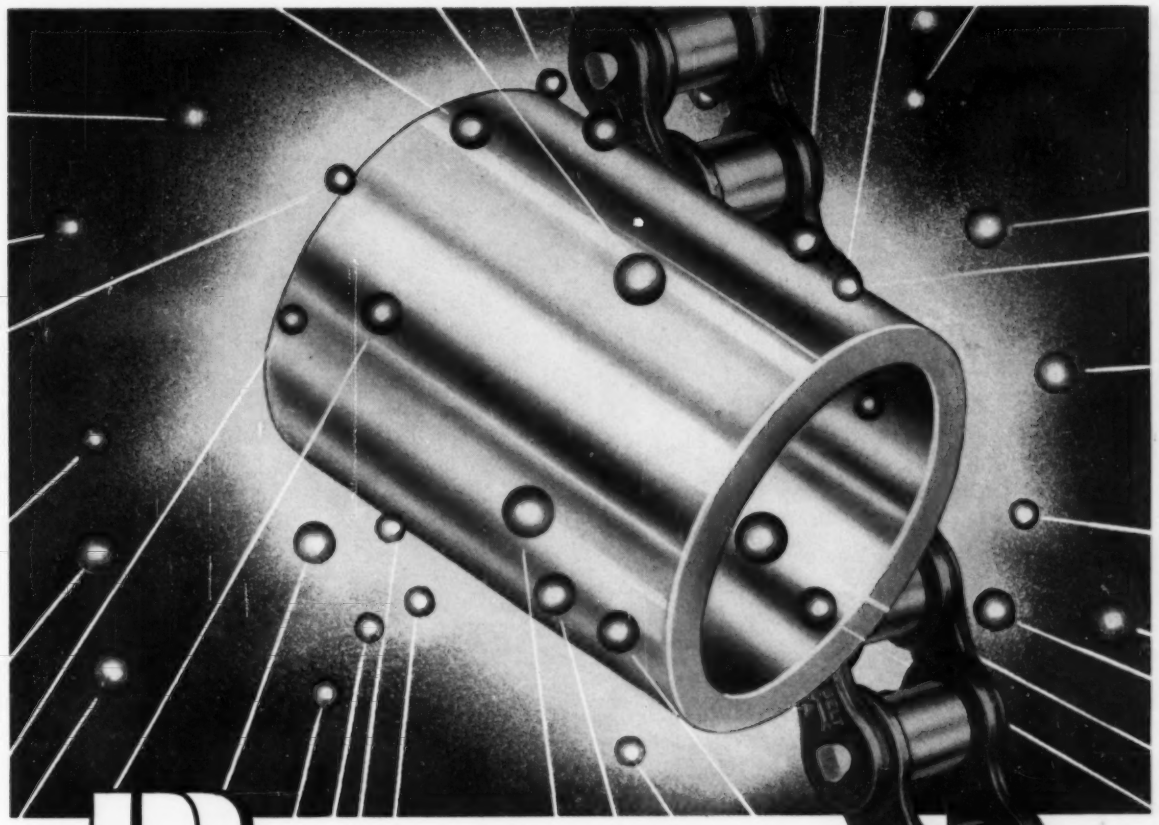
Raschel Patterns Are Many and Varied

Technical Editor:

We are interested in learning more about raschel warp knitters. Can you tell us how these machines operate and what patterns can be made? Also, we'd like to know if any books on warp-knitting technique are available. (1448)

There have been no recent books written on raschel knitting. The know-how is generally passed on from technician to trainee.

Patterns that can be made on raschel machines are almost limitless. Fabrics that can be made include laces, shoe fabrics, curtain material, carpets, millinery items, underwear fabrics, and many others.



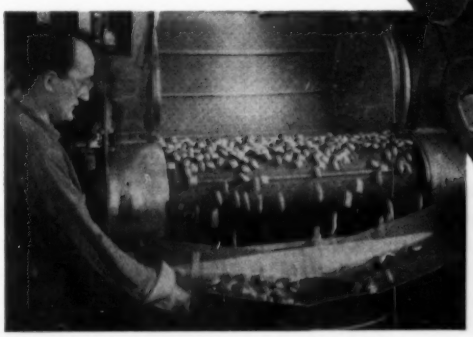
Rollers

fortified against fatigue

Shot-peening "cold-works" extra fatigue life into LINK-BELT roller chain

Shot-peening gives rollers of Link-Belt precision steel roller chain exceptional strength and stamina. And after shot-peening, they are burnished rather than ground or sanded. This achieves a SILVER-BRITE finish—and more important, *retains the fatigue resistant qualities of shot-peening.*

Other long-life "extras" of Link-Belt roller chain include: close heat-treat control, lock-type bushings, pre-stressing, pitch-hole preparation. For details, see Book 2657.



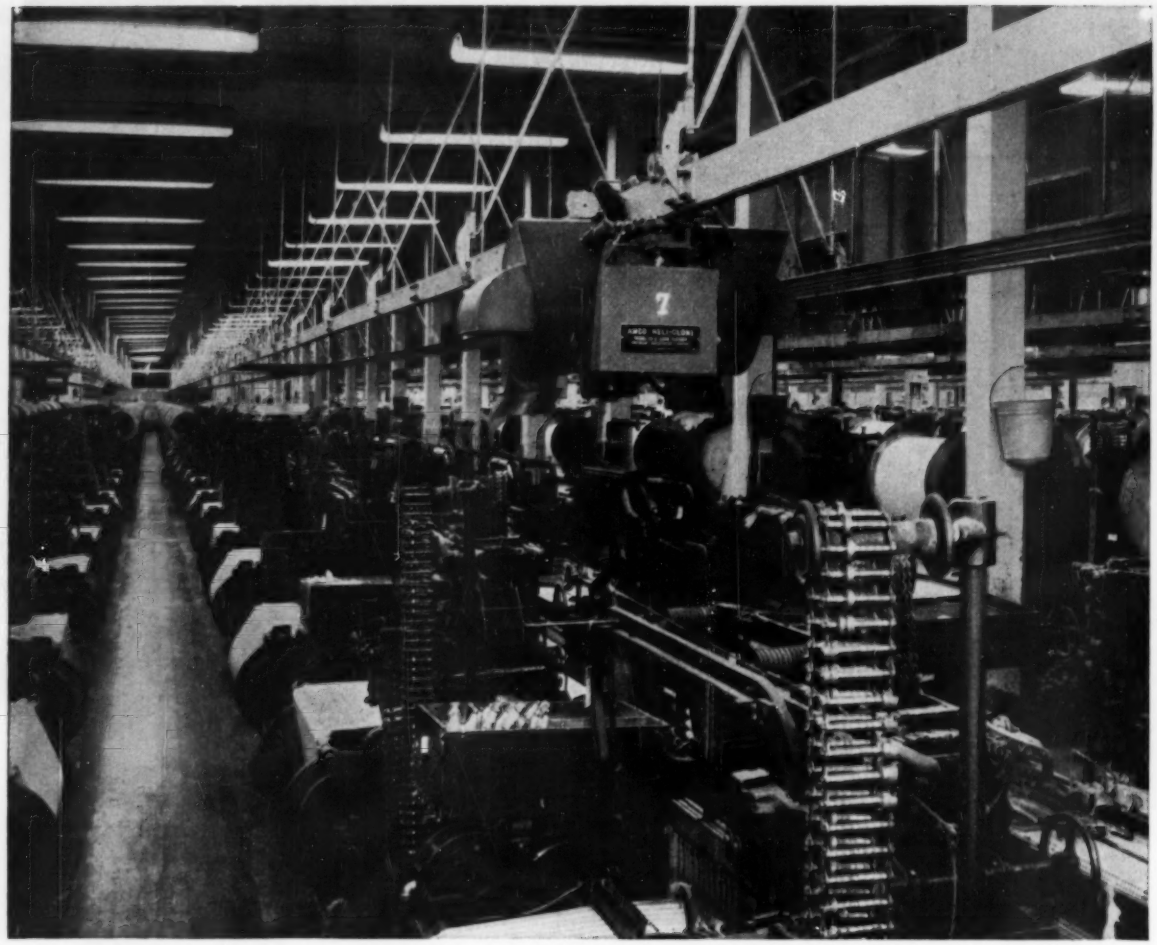
LONG LIFE AHEAD! Rollers for Link-Belt precision steel roller chain tumble out of shot-peening machine after being cold-worked to withstand punishment of today's high-speeds and heavy loads.

LINK-BELT

ROLLER CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 15,081

BOOK 2657 has 154 pages of roller chain data. For your copy, contact your nearest Link-Belt office or authorized stock-carrying distributor. (See CHAINS in the yellow pages of your phone book.)



Amco Heliclone Loom Cleaner in Cannon Mills, Kannapolis, N. C.

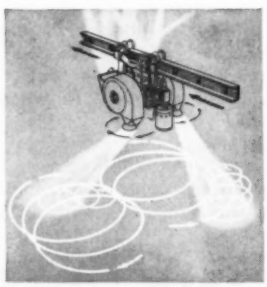
High quality and efficient production

Amco Heliclone® Loom Cleaners help Cannon Mills to maintain these high standards!

At Cannon Mills, Kannapolis, N. C., automatic, continuous cleaning with Heliclone Loom Cleaners helps Cannon to maintain its famous quality — and to meet production schedules. Room appearance is also improved, and employee morale kept high.

Heliclones are designed to help you cut down on the old-fashioned blow pipe and manual method of cleaning. They serve to eliminate end runs and floats, waste bunches, end breakage, overshots, broken picks, and oil spots caused by loose accumulated waste.

Behind the development of the Heliclone is more than 70 years' experience working with textile mills. Amco can help you with your winder and card room cleaning problems, too! Get the facts.



Rotating nozzles driven by air streams form overlapping circular paths. Results: high velocity bursts of air over loom and warp surfaces for best cleaning. Supplementary outlets clean track and ceiling.

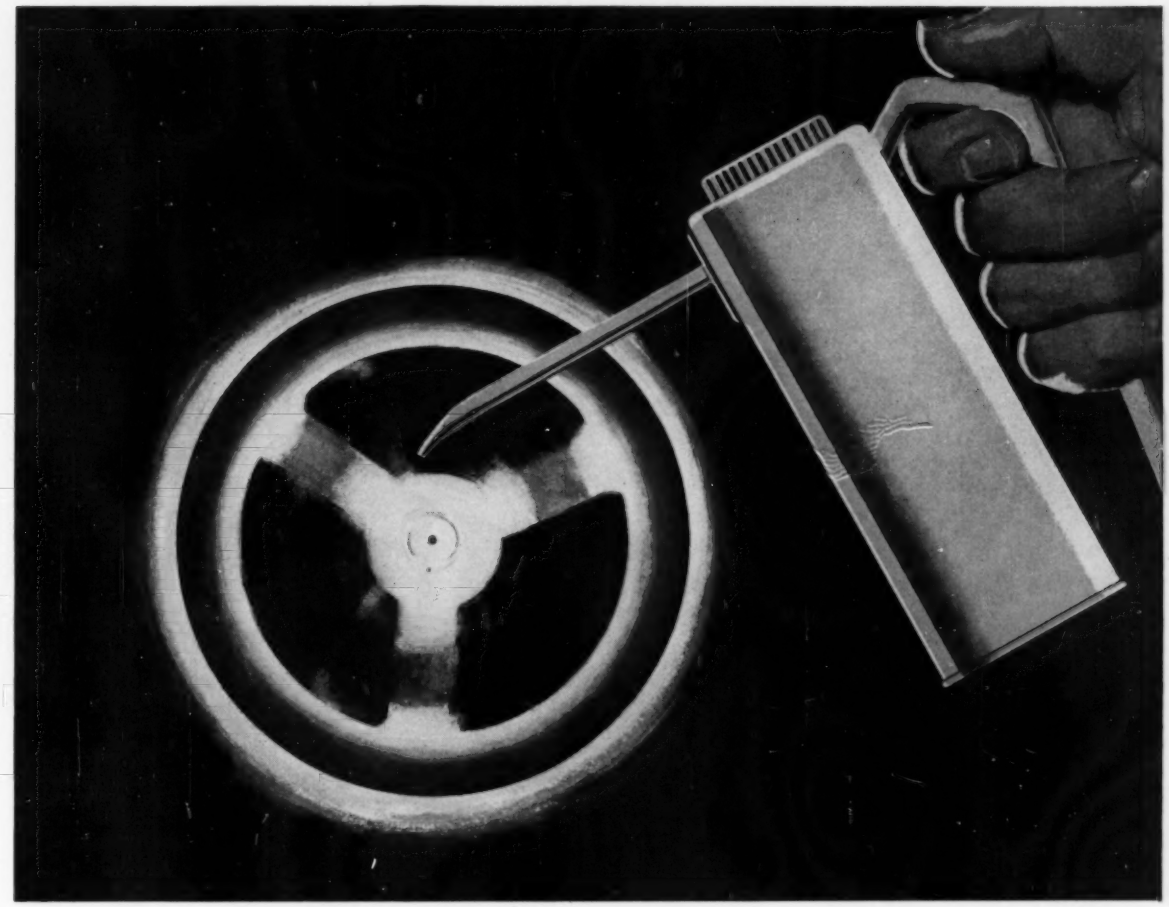
Cleveland-Rowan Plant of American Moistening Company. This modern plant is located at Cleveland, N. C. for the fabrication of duct work and sheet metal products.

AMCO

Since 1888

AIR CONDITIONING EQUIPMENT

American Moistening Company, Cleveland, N. C. • Branches: Atlanta, Ga. • Providence, R. I. • Toronto, Canada



Setting new standards in textile machine lubrication

NEW SHELL VEXILLA OILS

To assure high compatibility with today's synthetic fabrics, a completely new line of premium-quality textile machine lubricants has been developed—NEW SHELL VEXILLA OILS. These new oils are available in a wide viscosity range to satisfy all operating requirements.

Check these outstanding advantages:

1. Excellent Scourability—New Vexilla® Oils are *easily* and *readily* removed through conventional scouring procedures . . . completely eliminate oil stain problems.

2. High Oxidation Resistance—New Vexilla Oils contain special oxidation inhibitors to prevent increase of viscosity during service and storage. High viscosity index base oils minimize thinning out at high temperatures.

3. Eliminate Bearing Corrosion—New Vexilla Oils contain a newly developed rust inhibitor which keeps bearings *clean* and *free from corrosion*.

4. Non-Gummy—New Vexilla Oils contain no fixed oils such as lard, tallow and sperm oils to cause gumming. In automatic lubricating systems, they will not form harmful metallic soaps when in contact with zinc or copper.

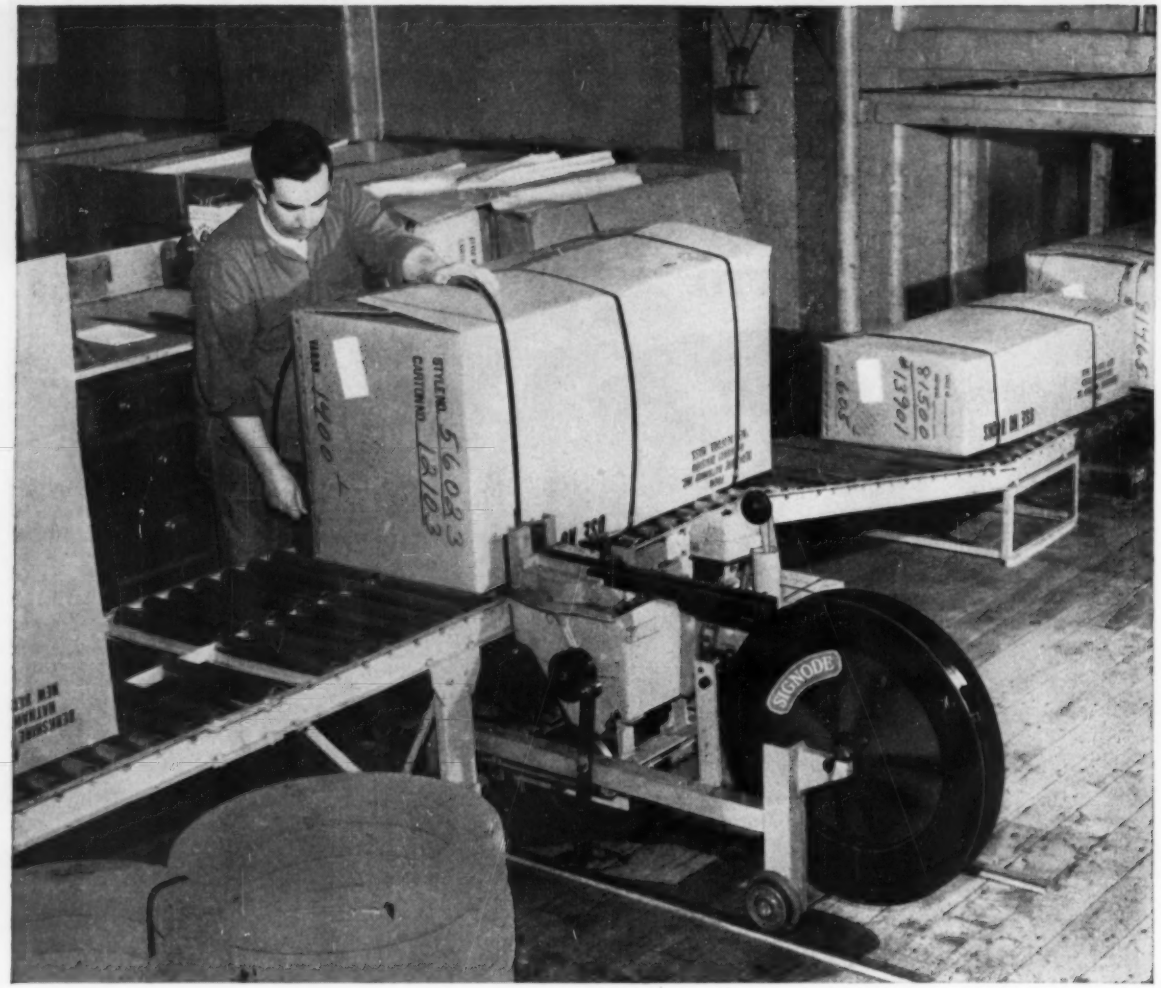
5. Outstanding Wetting Properties—New Vexilla Oils offer superior metal-wetting properties because of the carefully engineered balance of components and polar character.

The Shell Industrial Products Salesman will be glad to show you how to reduce maintenance costs and assist in the selection of the appropriate grades for *your* plant operation. Write Shell Oil Company, 50 West 50th Street, New York 20, New York. In Canada: Shell Oil Company of Canada, Limited, 505 University Avenue, Toronto 2, Ontario.

NEW SHELL VEXILLA OILS

. . . quality textile machine lubricants

SHELL



Signode PSM saves 8 man-hours per day

The Signode Power Strapping Machine applies each strap around these textile cartons in seconds...with right tension every time. The operator needs only seconds more to re-position the carton and feed the next strap.

Savings in time come to eight man-hours per day—equivalent to many times the Signode lease cost.

The Signode man can show you how strapping can save you money in many ways...with denser bales that save space and freight...with ways to eliminate wasted strap ends by using continuous feed. He can show you how to dress up your bales and cartons with seals that bear your trademark...show you new Signode machines, including air and electric power strapping tools and power strap feeders.

Make your product cost less to handle, store, ship, and receive. Call the Signode man near you, or write:

SIGNODE

First in steel strapping

SIGNODE STEEL STRAPPING CO.

2642 N. Western Avenue, Chicago 47, Illinois

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

ND FACTS

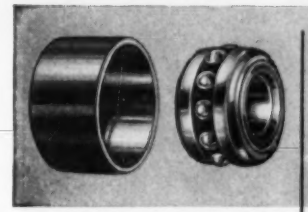
HERE'S NEW DEPARTURE'S COMPLETE LINE OF SEALED BALL BEARINGS FOR TEXTILE MACHINERY

New Departure textile bearings are made with integral closures to prevent leakage of lubricant and contamination of goods. All are smooth running, low friction ball bearings permitting higher speeds for faster production—longer service life.

Many are lubricated and sealed for life. Others use New Departure's Injection-Relubrication system. This permits revitalization of bearing lubricant for increased bearing life.

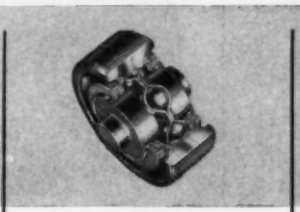
Write for full information on New Departure textile ball bearings, or call your New Departure sales engineer. Naturally, there's no obligation.

SEND FOR TEXTILE BALL-BEARING CATALOG TEX-1, NEW DEPARTURE, BRISTOL, CONN.



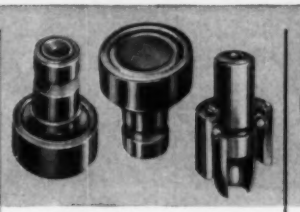
SPINDLE BEARINGS

. . . Cylindrical outer race permits removal of spindle from bolster without removing bolster from rail. Used for step bearings, but also used in high-speed spindle applications.



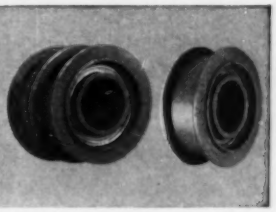
TREADLE ROLL BEARINGS

. . . permanently lubricated for long service. Designed to eliminate sparking. Double seals prevent leakage of lubricant, keep out dirt and lint.



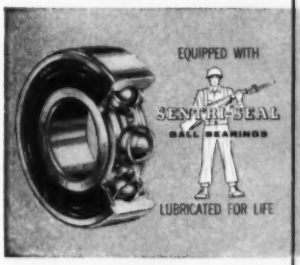
TENSION PULLEY BEARINGS

. . . available for both vertical mounting of idler or tension pulleys or horizontal mounting of tape tension pulleys.



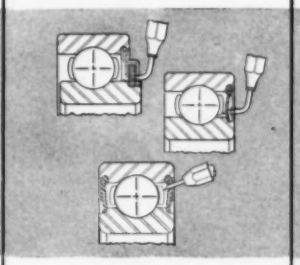
SHEAVE BEARINGS

. . . for automatic looms. Self-sealing assures protection for textiles, eliminates relubrication problem. Designed to permit nesting in gangs on harness sheave supporting shaft.



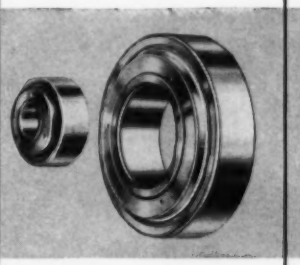
SENTRI-SEALS

. . . keep lubricant *in*, seal *out* dust, dirt and moisture for life. Sentri-Seals are synthetic rubber with spring steel rings molded in. Available in a wide variety of ball bearings.



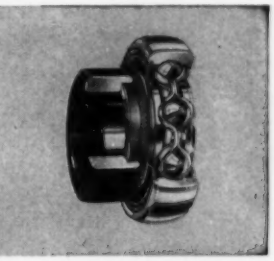
INJECTION-RELUBRICATION SYSTEM

Hollow needle and metering oiler extend grease life in bearings for many months in high-speed, long-service applications.



FELT SEAL

. . . annular ball bearings are protected from dirt, retain lubricant by integral felt closures. Complete line from 5mm. to 2¾" bore. Relubricated by injection-relubrication.



ADAPTER BEARINGS

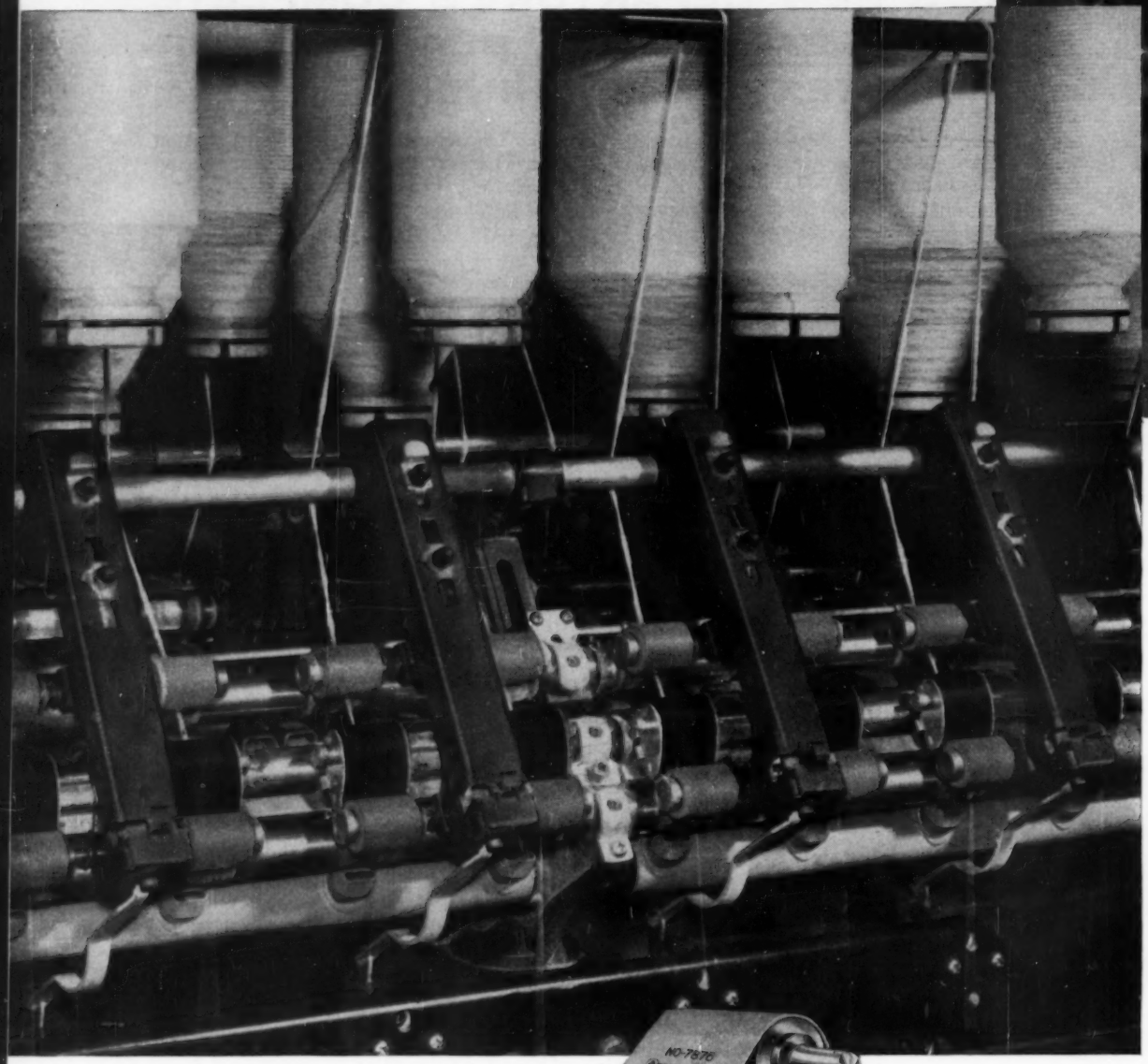
. . . easily applied to shafts; positive lock. Pre-lubricated, sealed. For moderate loads and speeds. Spherical or cylindrical O.D. for shafts ½" to 2 1/16" dia.

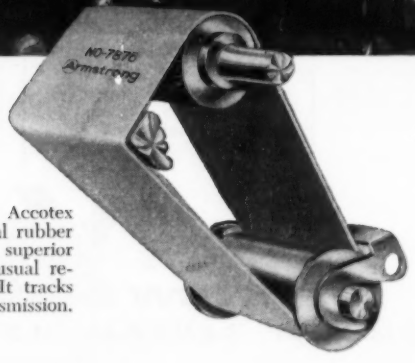
Replacement ball bearings available through
United Motors System and its Independent Bearing Distributors

ND NEW DEPARTURE

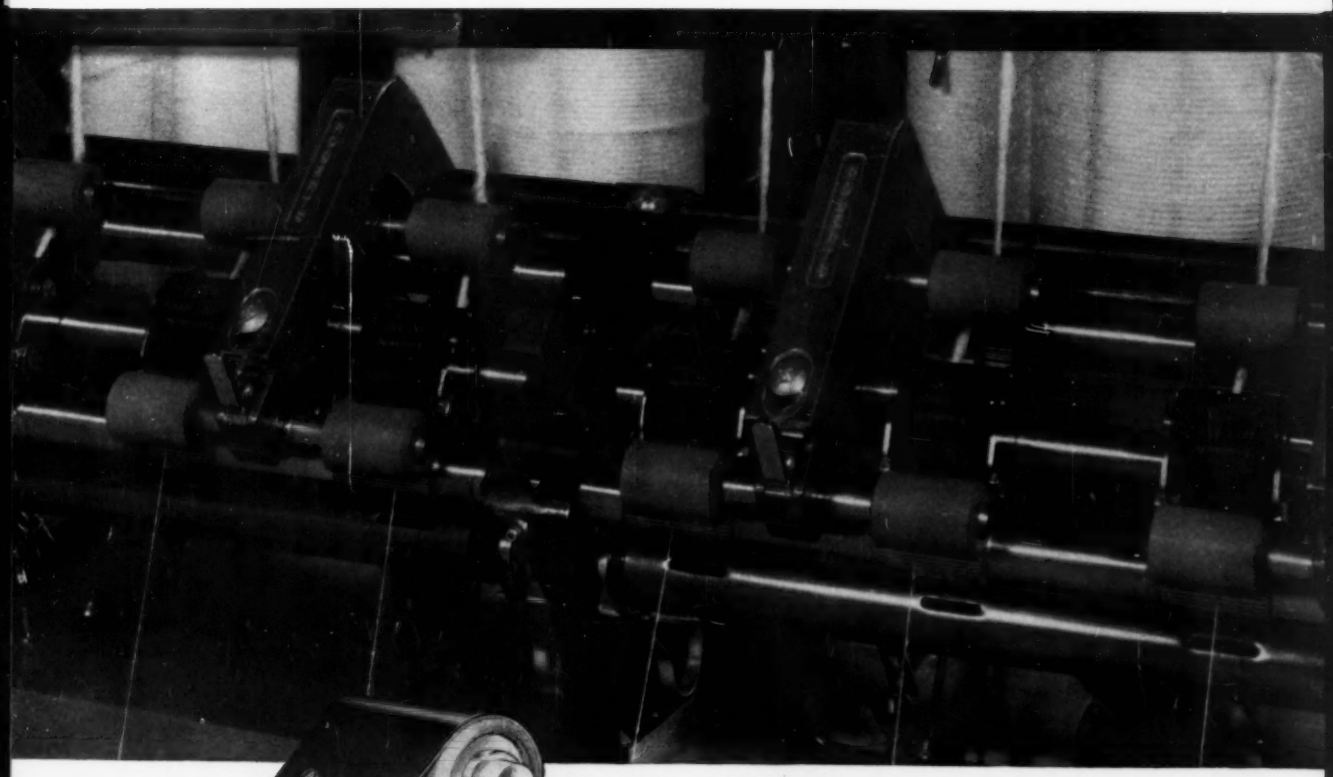
DIVISION OF GENERAL MOTORS, BRISTOL, CONN.

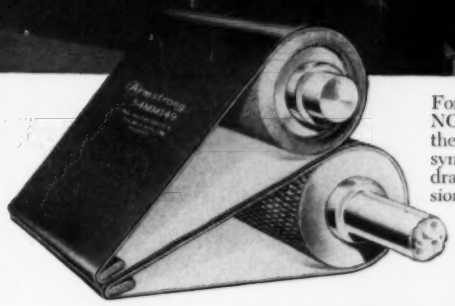
NOTHING ROLLS LIKE A BALL





For long-apron systems, Armstrong Accotex NO-7876 is recommended. Two special rubber compounds give it super-flexibility, superior fiber handling characteristics, and unusual resistance to flex cracking and ozone. It tracks accurately and gives full power transmission.





For close-pin double-apron systems, use Accotex NO-7075. This black-and-white apron pioneered the two-compound principle in aprons. Special synthetic rubber compounds give it smooth drafting properties and good resistance to abrasion and cracking.

On any drafting system get superior yarn control and long service with Accotex Aprons

Whether you're using a close-pin double-apron system . . . or one that uses long-bottom aprons . . . you'll spin top-quality yarn, shift after shift, with Armstrong Accotex Aprons.

These aprons have the right characteristics for consistently good performance on any frame . . . with any fiber. They give you the smooth drafting action and superior fiber control so necessary to high production of strong, uniform yarn.

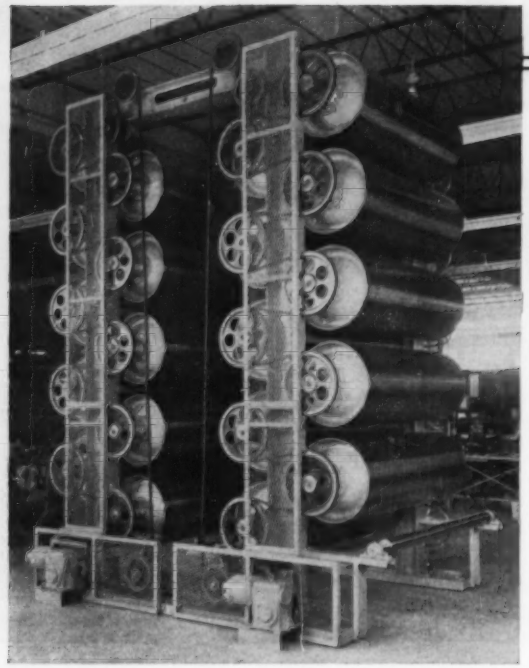
The patented construction of Accotex Aprons also contributes to their performance. A strong cord interliner eliminates stretching and curling, maintaining the apron's dimensional stability and assuring smooth operation at nose bar or pin.

If you're not already using Accotex Aprons, ask your Armstrong man to arrange a test. Or write for more information to Armstrong Cork Company, 6408 Dauphin Street, Lancaster, Pennsylvania.

Armstrong ACCOTEX APRONS

. . . used wherever performance counts

CIRCLE 29 ON READER SERVICE CARD



All parts are completely erected and tested in our shop before dismantling for shipment.

Cocker
Cloth Ranges

Low Initial Investment

Low Maintenance

Streamlined production in Cocker's new and modern plant has resulted in attractive prices for this fine equipment.

Cocker engineering has produced a more rugged machine to give longer trouble-free service, and has added features which improve operation.

Journals have been greatly improved, with 60,000 lbs. tensile strength instead of the usual 35,000. Seals and bearings are assembled in a single self-aligning unit to provide a leakproof seal.

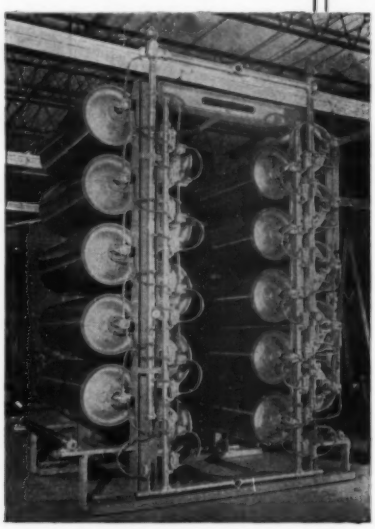
Drums can be either 23" or 30" with faces up to 144", and are ASME Coded for 69 PSI. Accurately matched cylinders assure a total runout not to exceed .045.

V-Belt Drive with automatic belt tighteners require practically no maintenance and run smoothly and quietly.

Drums can be heated from one or both sides, using either rigid or flexible tubing for steam and condensate return.

Base columns and cross members are of rigid construction to permit accurate alignment of all members.

Cocker will engineer these fine cloth drying ranges to fit your exact requirements. Write today for free consultation.



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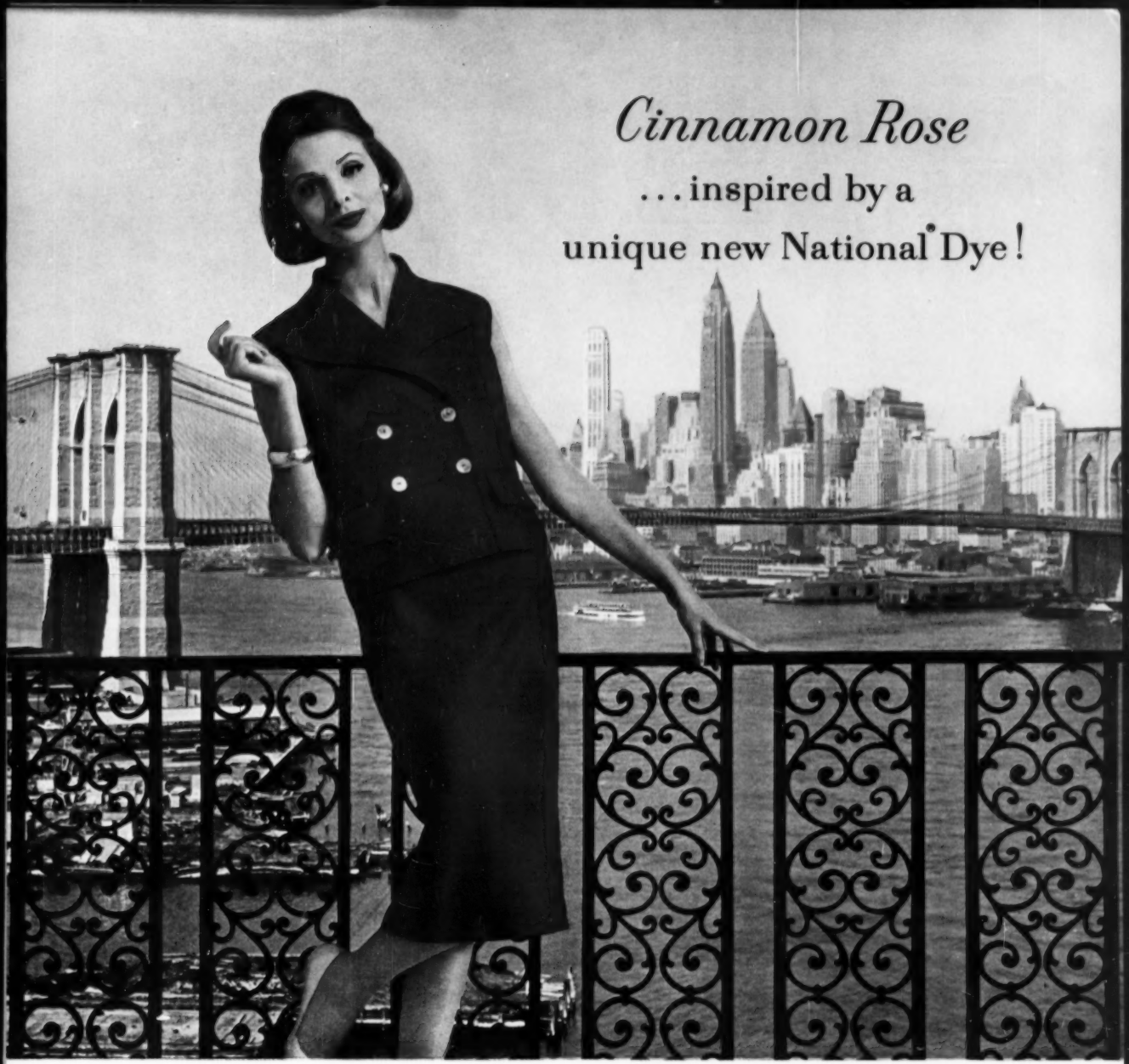

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. . . inspired by a unique new National® Dye!

Toni Owen

chose this spicy new red
to create a cheerful little ensemble
in wicker-weave cotton.

Some of the brightest reds possible on cottons and rayons are dyed with NATIONAL SCARLET YC BASE.

Combining remarkably high tinctorial value and excellent all around fastness, this versatile new naphthol dye is especially notable for outstanding resistance to light and washing.

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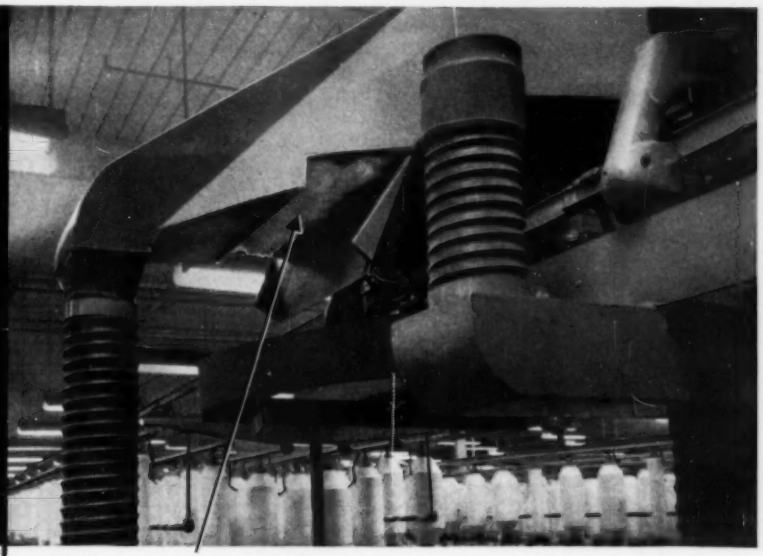
LINT DISAPPEARS

with Traveling Vacuum Cleaner



Door opens automatically exposing collected lint on screen as traveling unit approaches stationary vacuum cleanout box.

Stationary vacuum nozzle strips traveling vacuum screen clean as unit passes over. Door then closes and unit goes back to work keeping frames and floor continuously clean.

LOW COST!

. . . one "vac" cleans up to 30 frames automatically!

Your machinery stays cleaner . . . your yarn turns out better . . . your mill's working conditions are immediately improved.

Every American Monorail Cleaner is engineered to do a specific job efficiently, safely, and with minimum maintenance. Initial cost is low for the amount of cleaning accomplished. Check with American Monorail for any type of automatic cleaning.

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Engineered Automatic Cleaning and Handling Systems

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MEMBER OF AMERICAN TEXTILE MACHINERY ASSOCIATION

Mill after mill says, "It's amazing!" Dayton's

Golden Thorobred Drop Box Picker

Lasts at least ten times longer... cushions the entire picking action

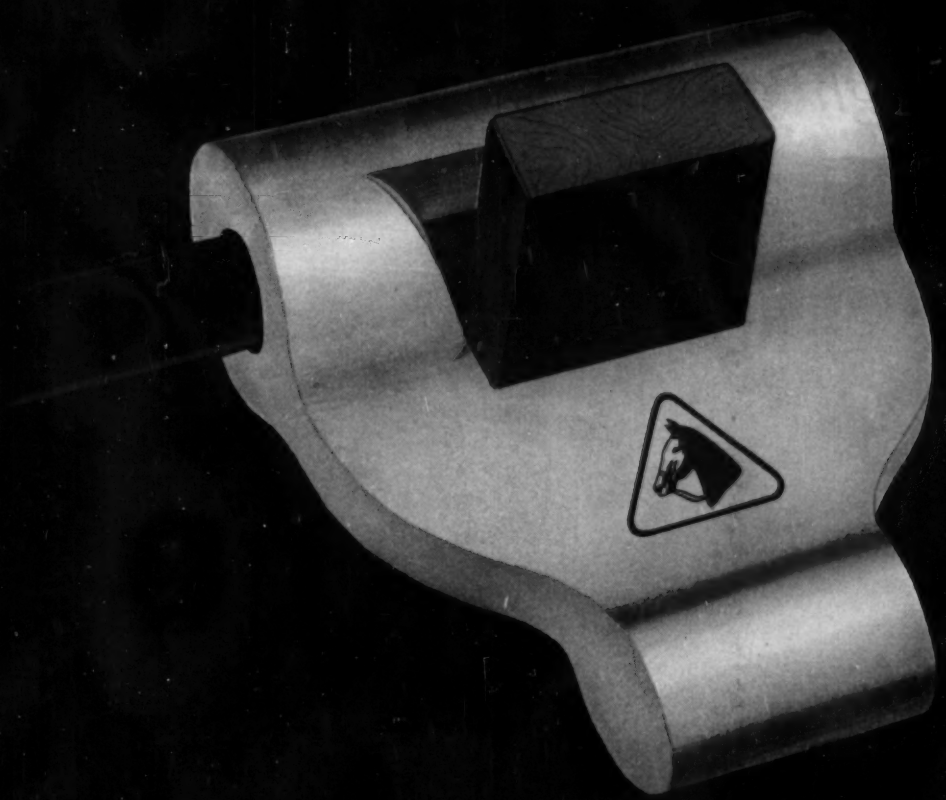
It all adds up to really tremendous savings in the cost of picker replacement and a new level of production efficiency with a product that's being manufactured right here in the United States.

And, how's this for a perfect balance of toughness and resiliency? The Golden Thorobred Drop Box Picker won't abrade the picker stick . . . yet resists wear to itself by up to 10 times longer. At the same time, the Golden Thorobred cushions the impact of the shuttle . . . protecting it against undue wear.

As an added feature, Dayton equips the Golden Thorobred with extra long-wearing Daylube Bushings which can be economically replaced again and again to extend the life of the picker substantially.

The secret of this long-wearing performance and easy-cushioning action is a new material created out of more than 6 years of Dayton research in advanced elastomers. Now, at last, you can buy a perfectly uniform, perfectly constant, drop box picker that never varies in size or performance. Each fits the picker stick in exactly the same way, to save you time and trouble.

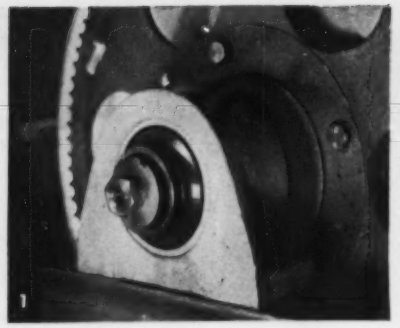
Dayton Golden Thorobred Drop Box Pickers are available now through your local Dayton jobber. Call him now or write The Dayton Rubber Company, Textile Division, 401 South Carolina National Bank Building, Greenville, S. C.



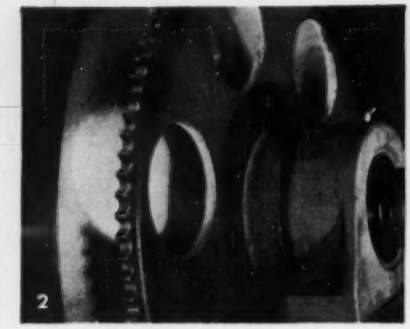
Dayton Rubber

Dayco and Thorobred Textile Products for Better Spinning and Weaving

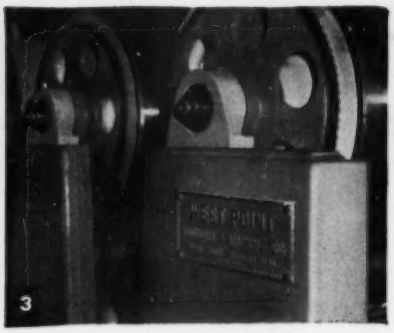
OVERSEAS PLANT, THE DAYTON RUBBER CO. LTD., DUNDEE, SCOTLAND



Largest cylinder journals and bearings: 2-11/16 inch self-aligning ball bearings are largest ever offered and with machined labyrinth-type grease seals assure you extra long service.

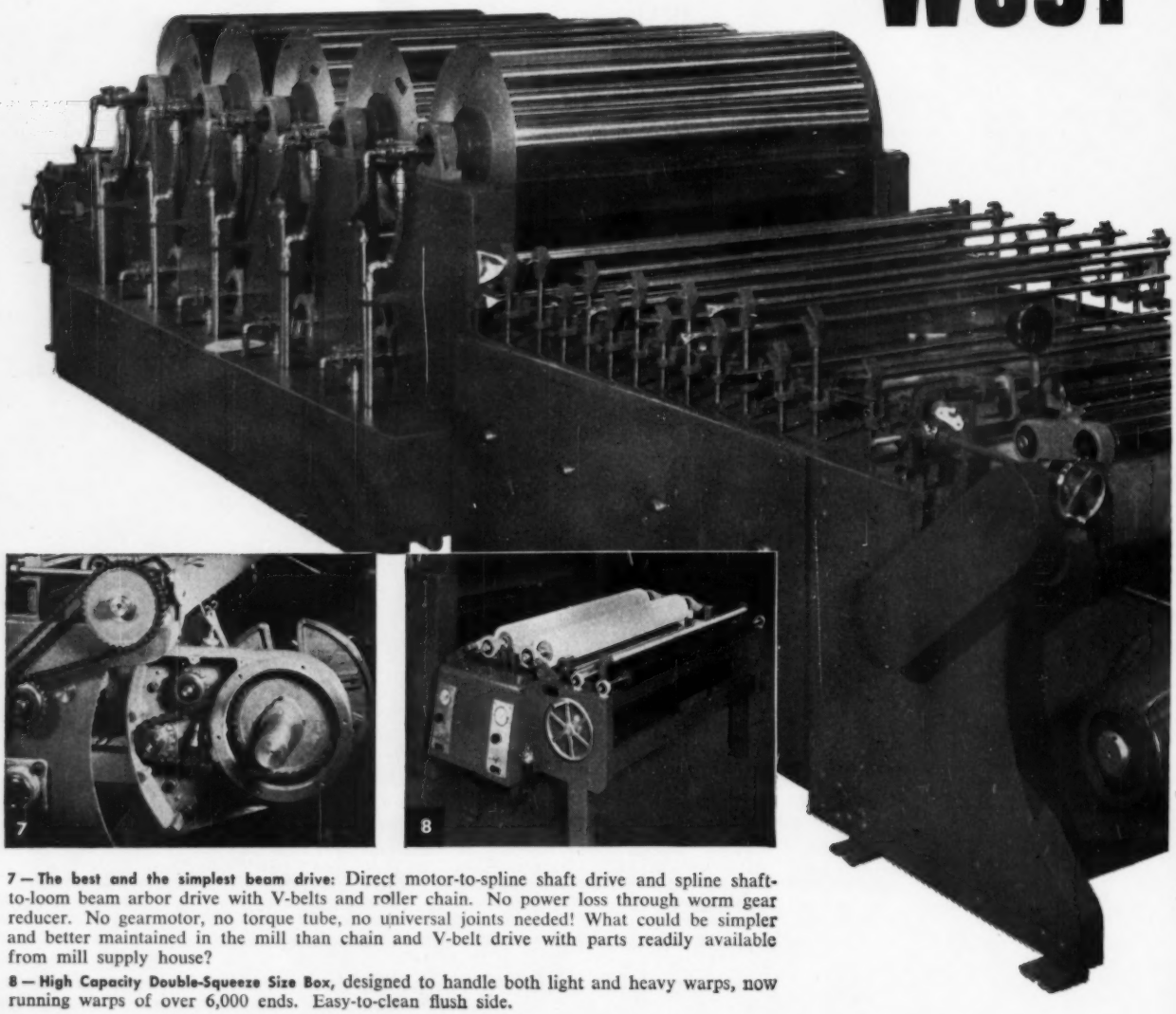


Largest sprockets: 25-inch 105-teeth sprockets mean more accurate control of cylinder surface speed and yarn tension, more efficient transmission of power, longer life.



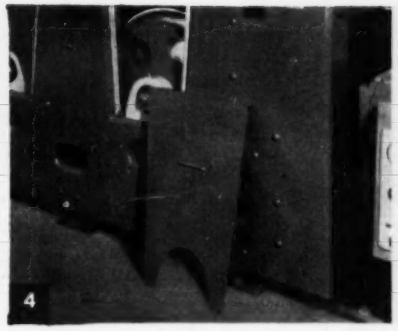
Heaviest frame built: 7" deep at the heaviest point, 4" deep at the lightest. New patent-pending "wide-open" design gives superior access to warp and cylinders.

Eight good reasons why **West**

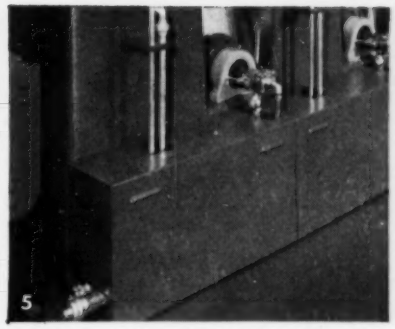


7 — The best and the simplest beam drive: Direct motor-to-spline shaft drive and spline shaft-to-loom beam arbor drive with V-belts and roller chain. No power loss through worm gear reducer. No gearmotor, no torque tube, no universal joints needed! What could be simpler and better maintained in the mill than chain and V-belt drive with parts readily available from mill supply house?

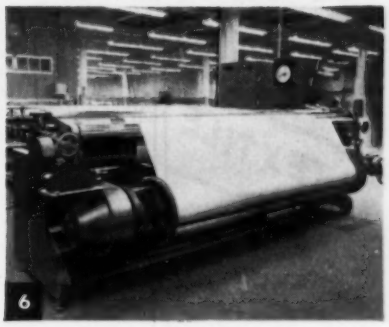
8 — High Capacity Double-Squeeze Size Box, designed to handle both light and heavy warps, now running warps of over 6,000 ends. Easy-to-clean flush side.



Removable side panels guarding sprockets are lifted out for access to warp and cylinders. No bolts, screws, or nuts to remove, to tighten or to lose! Note smooth clean side.



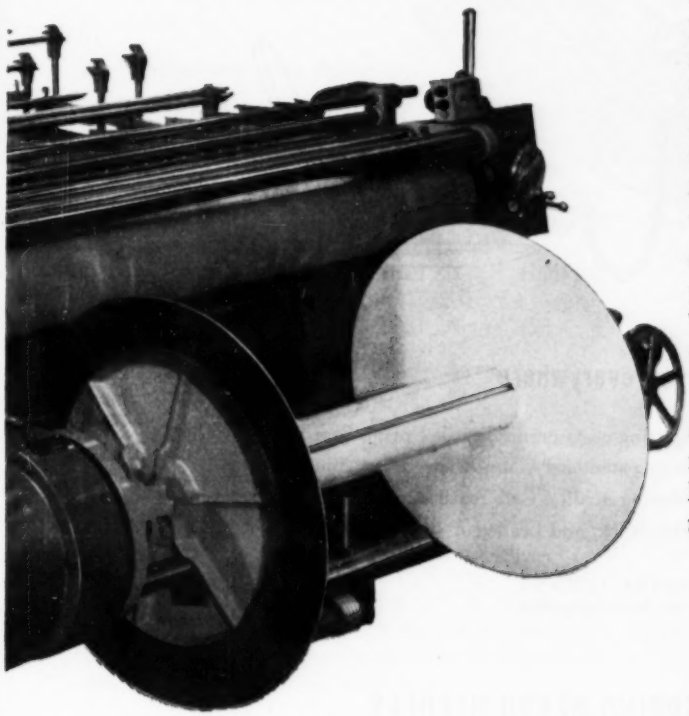
Steam and condensate manifolds are covered by a heavy metal guard for cleanliness and to protect operators from burns. Covers easy to lift off, yet strong enough to stand on.



Rugged high-speed head end can accommodate beams varying over 100 inches in width without projecting arbors (not limited to 50 inches).

Point SLASHERS

have outsold all others the last three years



IN ACTUAL SALES during the last three years West Point Foundry has sold more slashers than all other U. S. A. manufacturers combined by a margin better than 2 to 1. This is BUYING PREFERENCE expressed in hard-earned textile dollars which makes other manufacturers' claims sound empty.

WEST POINT'S PACESETTER is *not* the least expensive slasher built, but an overwhelming preference by buyers means it is the best value! This is only because of the exceptional quality features of the PACESETTER slasher.

Look at the superior quality features illustrated here; then contact your West Point Foundry representative for the complete story on the PACESETTER, the most outstanding slasher in the industry today.

WEST POINT
Foundry & Machine
Company

WEST POINT, GEORGIA

Textile Needles . . . ready to serve you everywhere

Mills that are seriously concerned with knitting costs prefer Textile Spring-Beard Needles because they are made to one exacting standard — uniform in every dimension, uniform in strength, straightness, and enduring quality. Call Textile for all your requirements in Spring-Beard Needles, Flat Stock, and Leaded Assemblies.

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TEXTILE MACHINE WORKS • READING • PENNA.
In the South: Asheboro, N.C. In the North: Manchester, N.H.
Builders of Textile Machinery Since 1900

Textile SPRING-BEARD NEEDLES

The "Reading" CK-A Circular Knitting Machine • The "Reading" Tricot Machine • The "Reading" Full-Fashioned Knitting Machine
The "Reading" Full-Fashioned Outerwear Machine • The "Reading" Braiding Machine • Textile Spring-Beard Needles • Arrow Latch Needles

The "Give-It-Awayers" Again

Early next month a textile event of international importance occurs: the huge textile exhibition in Milan, Italy. Along with manufacturers from the rest of the free world, 26 U.S. manufacturers, representing the bulk of basic textile equipment made in this country, will put their products on exhibit.

This seems an appropriate time, while attention is focused on the international scene, to take another look at the rooking the U.S. textile industry is getting at the hands of the U.S. government.

Two government policies are taking their tolls from the U.S. textile industry on both a long-term and short-term basis:

1. The Cotton Subsidy

This month the government subsidy on cotton for export was raised from 6¢ a lb. to 8¢ a lb. With a bigger crop coming up this year, foreign mills are now able to buy U.S. cotton about 25% cheaper than U.S. mills buy it.

2. Foreign-Industry Buildup

Even though there is world overproduction of textiles and the U.S. industry has been in a serious decline for several years, the government continues to help build up competing industries with U.S. money. In the nine months ended March 31, the government dished out $45.4-million for textiles and textile machinery through the International Cooperation Administration. That amounts to $5-million a month, less than $½-million of which was spent for U.S. goods.

A Vicious Circle

These two policies create a vicious circle of textile production that nibbles away at the U.S. textile industry. Here's how it works:

ICA is an agency purposely set up to make "soft" loans; that is, "loans" that hardly anybody expects will ever be repaid. These loans are U.S.-taxpayer money, U.S. textile-industry taxpayers as well as others. No restrictions are placed on where the loaned money is spent. In the case of textile machinery, well-advised sources report that the loans are being spent in descending amounts for Japanese, British, Continental European, and, least of all, U.S. equipment.

Of $7.1-million worth of textile machinery bought with ICA money in the nine months ended March 31, only $445,000 was made in the U.S.

Of $38.3-million worth of textiles bought with ICA money, less than $4-million worth was made by U.S. mills.

So what it amounts to is that the U.S. is giving away millions every month for "soft loaners" to spend with U.S. industry competitors.

To make matters worse, the government also now gives away 8¢ on every pound of cotton exported for use on much of the equipment bought with ICA money.

Then howls go up from all corners because the U.S. textile industry has the quaint notion that these goods, including the garments made from them, are not quite fair competition.

Coming Home To Roost

Early this year a wave of alarm went through the U.S. when reports were made on what happened to U.S. imports and exports last year. About 10% of the U.S.'s supply of gold seeped away to other countries, and the U.S. did not sell enough goods abroad to pay for imports and make the foreign payments for which it was committed.

Many economists and trade experts who for years had been clamoring for more giveaway and "freer" trade were shocked. U.S. policies of the last dozen or so years—such as ICA, subsidized cotton, no import restrictions, etc.—no longer seemed quite so beautiful. Other industries—aluminum, automobiles, even steel—began to feel the pinch to which the textile industry has been strenuously objecting.

Change Is Needed

Obviously such one-sided policies as the ICA loans and two-price cotton should be scrapped.

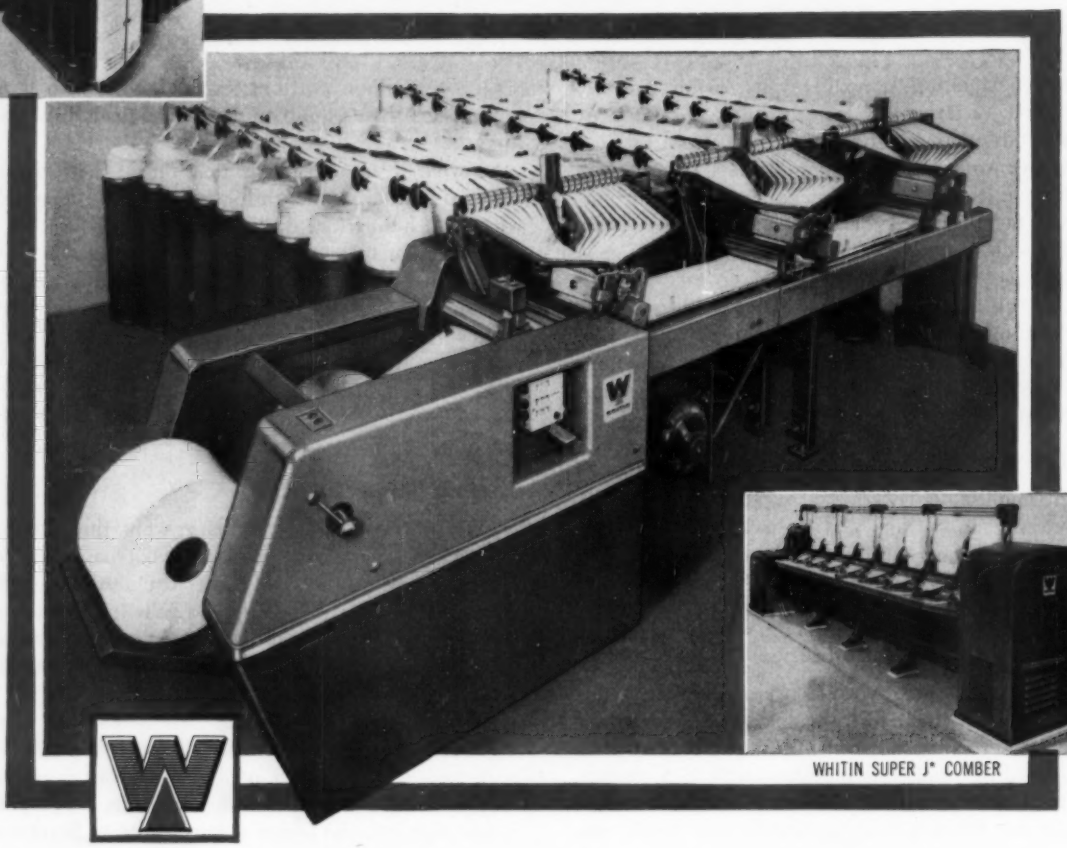
No U.S. industry is so accustomed to rough competition as the textile industry, and no industry is so committed to continuing free competition. But the industry, mills and equipment manufacturers, would like to see competition abroad become "free" for a change. A big step forward would be for the U.S. government itself to stop stacking the deck to give competitors undue advantages.

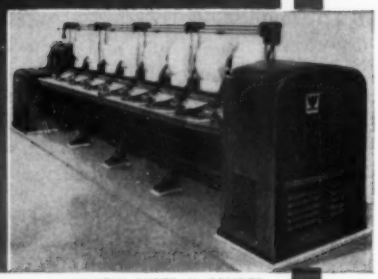
J. M. Thomas

The WHITIN SUPER J's New Running Mate-

the SUPER LAP machine

WHITIN
EVEN-DRAFT* DRAWING FRAME





WHITIN SUPER J* COMBER

The new Whitin Super Lap machine heralds a major advance in cotton processing. Running-mate to the famous Super J Comber, the Super Lap and the new Whitin Super Lap Preparation Method* hold promise of material savings in the making of combed yarns thru improving yarn quality, increasing Comber production and reducing Comber waste.

The Super Lap was specifically designed by Whitin Research engineers to implement a new concept in preparing Comber laps — the Whitin Super Lap Preparation Method — in which card sliver is first processed on the Even-Draft Drawing and then formed into laps by the Super Lap. This sequence of operations results in the superior lap in which all hooked and bent fibers have been straightened and made parallel — then on to the Super J Comber.

*(Pat. applied for)

Through this new method Whitin offers you these competitive advantages:

- **Lap production 500 lbs./hr. — 35 lb. laps from 60-end can feed.**
- **Up to 3% reduction in noils.**
- **Lap weights up to 1000 gr./yd. permit increased Comber production. (20-25%).**
- **Straightened and parallel fibers in lap afford easier combing.**
- **Recommended total draft 24-32.**
- **Improved yarn quality.**

For complete information see Whitin representative or write us direct.

WHITIN MACHINE WORKS

*TRADE MARK

WHITINSVILLE • MASSACHUSETTS

CHARLOTTE, N. C. • GREENSBORO, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • DEXTER, ME.

Plan '59

To modernize now for growth and profits

Goes Into High Gear

In 1959, industry will spend more money than ever before to modernize its plant and equipment. But it is not spending enough to do the job that needs to be done.

Manufacturing companies* now plan to spend a total of $24.5 billion on modernization in the four years 1959-1962. This will be enough to replace roughly 70% of the obsolete facilities that were on hand at the beginning of 1959. But it will still leave us far short of our goal. It would take several years, at a higher rate of investment than is now planned, to wipe out obsolescence and give the U. S. a truly modern industrial plant.

These facts stand out from the 12th annual Survey of Business' Plans for New Plants and Equipment just completed by the McGraw-Hill Department of Economics. This new survey shows that industry has made a remarkable start on the modernization job that a previous editorial in this series described as "the most expensive task to be performed in America in this new year of 1959." The full cost of modernization has been found by the McGraw-Hill Department of Economics to be $33.3 billion for manufacturing, and $95 billion for all business.

For the past several months, McGraw-Hill publications have been devoting special attention to new developments in plant and equipment that offer opportunities for modernization. Our special effort to help industry in this regard has been called "Plan '59": to modernize *now* for growth and profits. This editorial will summarize the progress made so far with "Plan '59" and point out some of the areas where business and public policies can do still more to accelerate the modernization drive.

A Good Start

Business investment in new plant and equipment has picked up sharply since the low point of the 1958 recession. Plans for 1959 now show a 7% increase over 1958 for total capital investment. And the increase in expenditures for modernization is much sharper. Moreover, companies already have substantial plans for the years after 1959. New orders for industrial machinery, which are a good index of modernization plans, also are running well ahead of last year.

For the four-year period 1959-1962, manufacturing companies expect, on the average, to devote 65% of their plant and equipment outlays to modernization. This is the highest proportion reported in a McGraw-Hill survey since 1950. In dollar terms, manufacturing companies plan to spend $24.5 billion on modernization during the next four years.

This is an impressive figure, but it does not look so large when compared with the total need

*Excluding petroleum refining, which is reported as part of the oil industry in the data discussed in this editorial.

for modernization in manufacturing industries. As noted above, a previous McGraw-Hill study (conducted in August 1958) found that it would cost almost $35 billion to replace all the facilities that manufacturing companies then considered obsolete. Thus, present plans for modernization are enough to wipe out only 70% of the backlog of obsolete facilities by 1962—and this makes no allowance for the additional facilities that will be made obsolete by new machines and new processes introduced during the next four years. When these new developments are considered, present plans for spending may represent only half the job that will actually need to be done.

How To Accelerate

What can be done to accelerate the drive to modernize our industrial plant and equipment? Two of the greatest aids would be:

(1) Improve present provisions under the tax law for depreciation, to help industry retain more of the money it needs to carry out this massive job of modernization;

(2) Contain inflation, to preserve the purchasing power of the money industry sets aside to replace obsolete facilities.

At first glance, the supply of funds from depreciation allowances appears to be more than adequate. For manufacturing as a whole, depreciation allowances—the primary source of cash for modernization—will total $8.3 billion in 1959, compared with present modernization plans of $6.4 billion. Thus some extra funds will be available to support a further step-up in modernization in 1960.

Unfortunately, however, these depreciation funds are not evenly distributed from industry to industry, or from company to company. For example, in several of the metalworking industries, the prospective flow of cash from depreciation during the next four years is much less adequate than for manufacturing as a whole. These are industries with relatively large modernization backlogs, and they also are industries made up mostly of small or medium-size companies that have difficulty tapping the public money market.

As a result of these industry and company differences, there are many individual cases where shortages of funds limit the amounts of modernization now planned. In the McGraw-Hill survey, nearly half of all companies participating said that they would spend more on new plants and equipment if the depreciation allowances permitted by the tax law were increased substantially over the next few years. Most of these were relatively small companies. Their answers suggest that revision of the tax rules on depreciation should receive the most careful consideration as a spur to faster modernization.

The problem is complicated also by the threat of further increases in the national price level, which would necessarily include prices of capital goods. If "creeping inflation" resumes its march during the next four years, depreciation allowances based on present costs will be much less adequate for future needs. This points up the importance of national economic policies to maintain price stability. Unless this can be maintained, industry's dollars will not go far enough to do the modernization job that is needed.

Plan '59 Carries On

Industry's drive to modernize is now well underway. It can make a key contribution to our national strength and prosperity in 1959 and the years ahead. But the biggest part of this job is before us. It is up to the policy makers—in both business and government—to see that the job is done.

This message was prepared by the McGraw-Hill Department of Economics as part of our company-wide effort to report on opportunities for modernization in industry. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or part of the text.

Donald C. McGraw

PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.

Textile World

Volume 109, No. 8, August, 1959

Analytical Training Method Trains Weavers Fast and Well

• All learner weavers in a South Carolina mill are being trained by a method that analyzes the job to be learned. The system works so well that regular production weavers have also been trained.

A TRAINING METHOD that came from England, the analytical method, was a feature of the round-table discussion at the Annual Conference of Industrial Trainers in which training supervisors from two mill companies involving seven total weaving mills explained their methods of training weavers.

One mill that has been training weavers in a regular program for the last 10 years has been using the analytical method for the last year. Here's what the mill reported about how it uses the method:

We train all new weavers in our own mill and don't hire any outside weaver unless he has worked in our mill before. This policy doesn't necessarily mean that we think we have better weavers than other mills; but our own weavers understand our company methods, and we promote employees within their own departments.

Trainees Are Mill Hour Hands

Weaver trainees are selected from batteryhands, filling boys, and other hour hands. Weave-room supervisors select trainees who express a definite desire to learn to weave.

We have methods to give possible trainees finger-dexterity tests, but we don't use the tests unless there's doubt that an employee lacks the necessary dexterity.

We haven't gone into a trainee's height, age, weight, and similar physical features. But one woman trainee had trouble because she was so short. We do check each trainee's eyes thoroughly.

At present we have a college trainee who has gone through a 10-week training period. He had only a one-week orientation period in the mill but is now running 24 looms at high efficiency.

During the last year, we trained 12 weavers. All the trainees except two were men. A high percentage of men was trained for two reasons:

1. We want to keep our men and women weavers well balanced as they are at present with about 50% of each; older weavers are women.

2. The new men weavers are possible loomfixers for the future.

But we will continue to train women weavers from batteryhands.

Trainees Are Checked Thoroughly

Trainees are screened thoroughly for past records as employees because we certainly don't want to spend money uselessly by having trainees fail.

Learner's pay is above the minimum pay rate but it can be less than the rate of his regular job.

The weaving instructor has 30 years of weaving experience and has been instructor for the past 10 years. His pay is 5¢ an hour above that of the average weaver at our mill.

We have a separate training room with five looms equipped for weaver training.

Two trainees are trained at once; and with this setup, trainees compete against each other and learn faster. We have trained six weavers at once, but two weavers can be trained much better.

We have used various methods of training in the past, and have considered others. For the past year, we've used the analytical method of training with good results.

The method is based on 12 elements necessary for a weaver, and each element has key points such as tying a weaver's knot and restarting a loom at a filling break. We set up exercises and establish a target time for each point. Each trainee practices each element to complete it within the target time. For example, 0.40 min. is the target time for tying a weaver's knot.

Each trainee keeps a daily chart, which is a simple graph of his progress. On his fifth day, he should reach or beat the target time of 0.40 min. for tying a weaver's knot.

So that the trainee doesn't stay on one point too long and become frustrated, he is taught all 12 elements at once. When he has learned the 12 elements, they are combined for a complete cyle. Then he is timed for the cycle.

Based on mill reports from the Eleventh Annual Conference of Industrial Trainers held at Clemson College, Clemson, S. C.

Training Is Ended in Weave Room

When this training is completed to the instructor's satisfaction, the trainees are taken to the weave room and each is given four looms to run under the supervision of the instructor. Then each trainee is subsequently given 8, 12, 16, 24, and 30 looms according to his progress and the complexity of the fabric style.

This weave-room training builds up his stamina. He is checked closely by the instructor to see that he practices all 12 elements he has been taught.

At any time, a trainee may be taken back to the training room for additional training on the elements.

This weave-room training period is a critical stage in training. It's often hard to keep a trainee from becoming discouraged.

Production Weavers Are Trained

After this training is completed, the trainee is given a complete set of looms as a weaver. But he isn't forgotten; he is analyzed periodically.

For the 12 weavers trained last year, average training time was 10 weeks. This training time could be reduced if we had fewer styles in the weave room. At present there are 250 different styles on 1,400 looms, and this number of styles is less than normal.

Assignment for regular weavers is 14 to 60 looms, and the average assignment is 25 looms. A weaver may have a different style on each of his looms.

Fabrics woven are fancy cotton and man-made-fiber goods of both spun and filament fibers.

All production weavers have been given this same type of training. We also make periodic analysis of production weavers and take them to the training room.

Trainees May Work on Any Shift

Training is primarily on the first shift, but we train on all three shifts.

Weaver trainees sign an agreement when they start learning that they understand they may not be given work as production weavers on the first shift since older weavers have their choice of first-shift jobs.

Training operates smoothly. The only hitch is that a weave-room supervisor sometimes requires a trainee for a regular weave-room job as batteryhand or other day job if he is short. But these instances are few and are becoming less frequent.

Not all trainees make the grade as weavers. During the training period, he can stop and return to his old job. But once he becomes a trained weaver, he cannot go back to his old job.

We don't have cost figures on weaver training at present, but we're working on them now.

Six Mills Use the Same Methods

Training methods of the second company involving six weaving mills are more conventional but are very effective. The fact is there's little need for training at present because weaver turnover is only 0.75 to 1.25% per month for the six mills. Here's the mill's report on its methods:

Our present training program was organized in the fall of 1942 for loomfixers and has been extended to weavers. The basis of the methods still used came from the original Training Within Industry courses.

Weaver turnover at our mills has been reduced since the course was organized from 15% per month to 0.75 to 1.25%.

We're presently running four State Vocational School classes, but we don't have organized classes within the mill company itself now. We used to have classes of four to six weaver learners, but we don't need that many replacement weavers any more.

Only Men Are Being Trained

In weaver training, no two mills of the six follow the same exact program. But generally the over-all program is:

1. A weaver is never hired as a production weaver who has not worked for our company before. We've found that weaver turnover is very high for weavers hired at random.

2. We select weaver trainees from batteryhands, cloth boys, and similar hour hands. And we train only one weaver at a time.

3. The learner has already learned a skill of some type in our mill, and he has already learned our company policies and has accepted them.

4. We're going to men learners exclusively for two reasons: (a) all our looms are X-2 looms from 40 to 60 ins. wide, and women cannot reach over loom parts easily and (b) we want to train weavers for future loomfixers.

5. Warp men or filling men are usually selected because they have learned a little about weaving in their spare time and have asked for a chance to learn.

6. We have no set height, weight, or age for prospective learners. But in the past, we've had trouble with hernia cases among men employees. Now we give each employee a rigid physical examination when he's employed. So results are about the same as selecting men with the best height, weight, and age necessary for best weaving ability.

7. After a prospective learner has learned a little on his own, he is put with an experienced weaver only about one day a week or even only one day a month at first. Then he is put with the weaver more often.

8. Then when a weaver will be needed soon, the learner is put with the best weaver available for six to eight weeks. He is given a set of looms when he's needed. These weavers run looms at 90% efficiency from the start.

During the last year, one mill trained five weavers and all were running looms in six weeks.

An exception to our general practice occurred at another mill this year. An hour hand had picked up weaving methods during his spare time, and he was put with an experienced weaver for further learning. At the end of three days, the experienced weaver said the learner had been taught all he could learn from an instructor. He was given a set of looms and is running them efficiently.

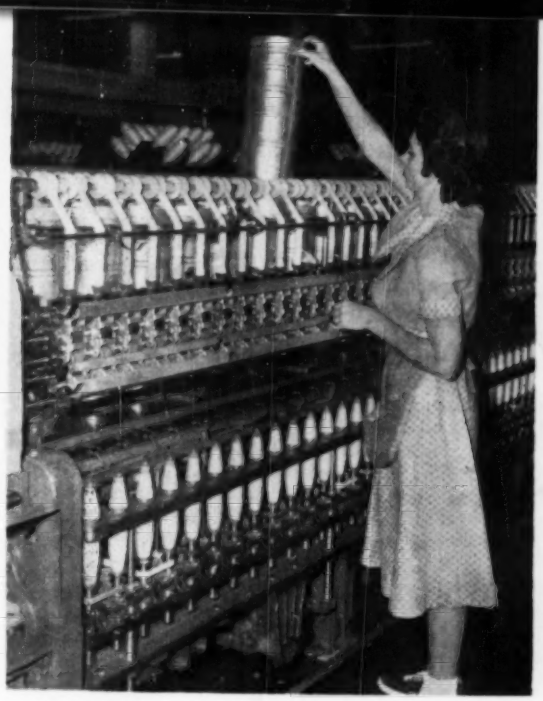
Training Pays Off Throughout Mill

Production weavers have 36 to 56 looms. Fabrics are drills, twills, jeans, and sateens.

Weaver training, as has all training, certainly has paid off at our mills, especially in reduced labor turnover. In a recent check on 140 loomfixers during a one-year period, we changed nine men. Comparatively for 35 section men in six mills, we changed one man one year and one year we had no changes.

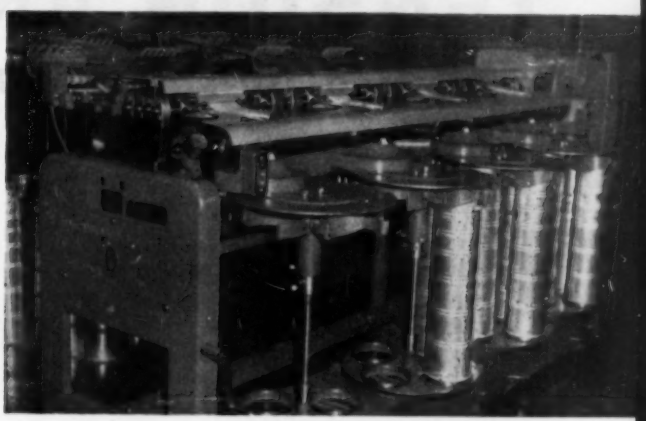
In addition to weaver training, we train all loomfixers and supervisors. We have hired only three supervisors since 1944. They were a card-room overseer, cotton-department supervisor, and overhauler supervisor.

Of 200 staff and line men above fixers, less than 10 are in positions they were originally hired for.



CREELING presents no great problem, although operators say that they have to stretch to put up the 6x18-in. cans.

SUPPLY CANS are filled automatically with one week's supply of sliver for 58s yarn by a special drawing frame.



Direct Spinning–

Test Frame at Coats & Clark Shows Considerable Promise

Production tests run on a 300-spindle frame, installed several months ago at the Pelham, Ga., plant, indicate that it may be feasible to spin high-quality thread yarn directly from drawing sliver. Some of the results—

- **Costs—down more than 5¢ per lb.**
- **Ends down—22 per thousand spindle hours**
- **Spindle speeds—10,000 to 11,500 rpm.**
- **Cleaning time—reduced substantially**

TESTS RECENTLY MADE on a full-size direct-spinning frame at Coats & Clark, Inc., Pelham, Ga., indicate that savings of better than 5¢ per lb. are possible in the production of sewing-thread yarn under present operating conditions.

This saving is predicated on increased work assignments, fewer ends down, increased spindle speeds, and the elimination of two-process roving now in use. Comparison is made with relatively old conventional frames.

The only disadvantages of the direct-spinning frame noted to date are awkward creeling and unsatisfactory drafting when the sliver splices are too hard.

The frame under test has 150 spindles on each side and feeds from 6-in. cans. Gauge is 3½ ins., rings are 2 ins. in diameter, and traverse is 8 ins.

A wide range of thread yarn has been made experimentally from long-staple Egyptian cotton. Here's how 58s, a typical number, is made:

High-grade 1 3/32-in. cotton is processed in the normal manner through opening, picking, carding, and combing. Then a special drawing frame is used to put the sliver into 6x18-in. cans.

A 50-grain sliver is made from the same-size comber sliver. Draft is 6, and draft constant is 0.07. Four-over-four drawing rolls are used. Draft-gear teeth, incidentally, are increased to lengthen draft instead of being decreased as on conventional frames.

About 2¼ lbs. of sliver is put in each can every 6½ mins. Four cans, which are automatically changed, are used at each delivery; and predetermined yardage is put in them.

The drawing frames operate at 130 ft. per min. but could run faster if greater production were needed. Variation averages 11.8% per 10 yds. of sliver.

Spindle Speed Is 10,000 Rpm.

The spinning frame runs at an average spindle speed of 10,000 rpm. Tests show that it will run 11,500 rpm. on some numbers without increasing ends down.

Average ends down for 58s are 22

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TENSION ANALYSIS—

a new tool to solve many textile problems

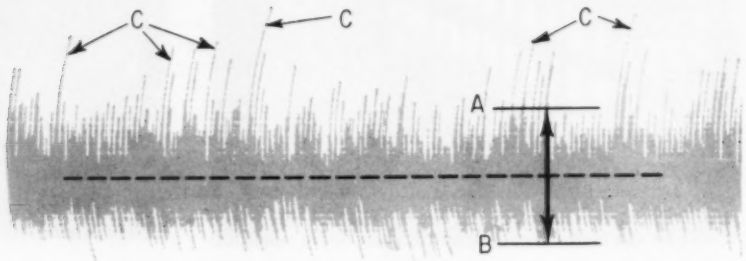


FIG. 1—TENSION CHART made on a quiller shows the points C that indicate excessive tension peaks. The points A and B indicate the normal tension range that should be kept low.

• Many tension problems are being solved by electronic tension analyzers that measure and record tension variations in textile materials. This article tells how these instruments can be used to set up a tension program to improve quality and production in most textile operations.

By BILL BAILEY, Consulting Engineer

TENSION PROBLEMS have always worried textile men. One of the worries has been the lack of instruments to record tension variations. Electronic tension analyzers are now filling this need, and mills are installing tension programs. Here's how to start a program:

Select an operator with a good textile training. He requires no background in electronics, but he should know his mill's operation completely.

Use an integrated testing program to get the best results. Piece-meal testing as the need arises rarely pays dividends.

For instance, an effort was made in one mill to equalize tensions in a slasher creel in the hope that the beams would empty simultaneously on the doff. After several hours' work, the beams were pronounced to be running at equal tensions and large savings were forecast.

Only slight improvements were noted, however. The prevalent tensions on the beam itself had been overlooked, and previous operations in the mill affected these tensions.

In another case, a winding machine preparing dye packages was set up with the analyzer. The first doffs dyed beautifully, but off-shade packages soon appeared. A recheck showed different tensions in the supply packages, and adjustments in preceding operations had to be made.

The only solution to these problems is to have a constant over-all testing program. Most mills have such a program in evenness testing, and tension programs should be tied in with evenness programs.

When ends come down, the trouble may be unevenness, tension, or machine defects. Because most mills operate quality-control programs as a part of production, tension analyzers should be located in quality-control departments.

Because tension analyzers are very sensitive, minor tension problems can be amplified to appear disastrous. Use only enough gain or amplification to center the information on the chart. More or less gain can be used for special purposes. If you are not sure what results would be correct, run several checks on parallel ends to determine an average.

If the instrument has a frequency cutoff, you can use it to filter unwanted frequencies or vibrations. Adjust this control slightly above the rate of repetition of the machine under inspection.

How To Select Frequencies

For traveler and shuttle work, use the highest frequencies. For winders and looms, use the middle ranges; and use the lowest setting for spinning creels and slasher creels and to obtain the average of any frequency.

The several chart speeds are important trouble-shooting features of tension analyzers. By selecting chart speeds, the data can be spread out for easy interpretation. An incident marker pen that may be operated with a hand-held switch is a time saver in identifying troublesome tension peaks.

The current method of operation is by zero suppression. Position the pen at the lower edge of the chart. Most chart papers are printed for this position. On finer measurements, such as to determine the tension analyzer between different winds, the pen position might be better in the center of the chart.

The charts are not easy to interpret at first, although a genius is not required to interpret the results. For instance, we can't look at a chart and immediately say that the 14th tooth of the 91-tooth gear is broken.

Here are a few examples of problems that have been solved by careful analysis:

A tension anlysis was made on a quiller to give the chart shown in Fig. 1. The sensitivity was adjusted so that each line equalled two grams. The frequency was adjusted at maximum to insure the pen's response.

The dotted line on the chart is the average tension, which is about 40 grams. If more weight is placed on the tension disks, the lines on the chart would remain in the same pattern but the pattern would be higher on the chart.

If weight is removed from the tension disks, the pattern would be lower and the quill would be softer.

Points *A* and *B* on the chart show the range of tensions. This range should be kept to a minimum. Point *C* indicates a serious fault. These points are plucks or points of extreme tension and are potential causes of ends down.

To rectify this trouble, make adjustments on the lay, the stroke, the bobbin build, the position of the supply package, and the position and weight of the tension disks. Make a chart after each adjustment.

Reduce the Tension Range

Your goal is to keep the ends down as low as you can; so improve the average tension by reducing the tension range and eliminate all plucks. You may not succeed in eliminating all plucks, but you should improve your quilling. One mill got 14% more production on a quill by using this method.

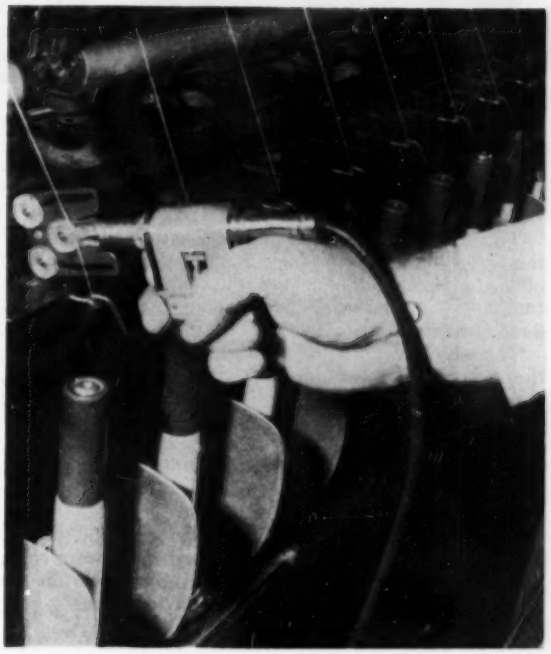
Spinning rooms are practical places to use tension analyzers. Problems in the use of skewers on hangar creels can be solved with a tension analyzer. Standards such as the size of the package and the distance of the package are difficult to set. The distance behind the roving rod, the height of the roving rod, the roving-rod material, and the type of brake are difficult to judge correctly. Some conditions are set, but others can be changed to give a straighter line on the chart.

Composite tension on roving skewers is formed from the friction of the skewer to the creel board and the friction of the roving on the roving rod. The skewer friction will remain constant, but the friction over the roving rods will change because the angle of pull changes as the roving unwinds.

To determine the correct height of the rod, make tests to determine the tension at three points as shown in Fig. 2. If the tension is higher at point A than at point C, lower the roving rod. If the tension is lower, raise the roving rod.

A third source of tension in hangar-creeled roving is caused by the hanger swinging. This swing is caused by the hanger moving in a series of jerks. Each jerk tends to stretch the thinner places in the roving. If the end doesn't come down in the creel, it may come down in the drafting zone or where tensions are higher.

Skewer tensions should be from two to four grams, while hangers will read from five to eight grams and show a variation. When all variables have been adjusted, you can perhaps reduce roving twist and improve production.



TRAVELER LIFE can be determined with tension analyzers. Install new travelers and make a tension check. Make periodic tests to show the minimum tension over the life span.

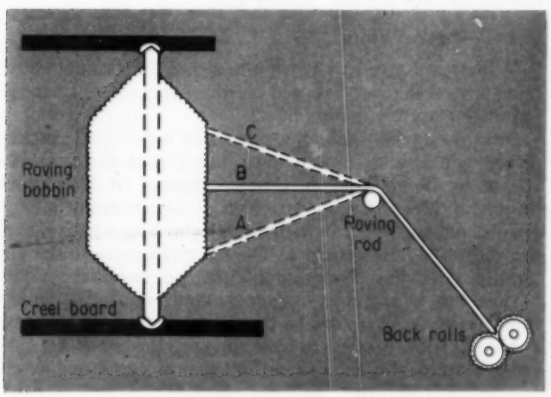


FIG. 2—TENSION PROBLEMS on roving from skewers can be solved with tension analysis. To determine the correct height of the roving rod, make tests when the roving is at *A*, *B*, and *C*.

What Is a Tension Analyzer?

A tension analyzer consists of a pick-up device, a sensitive amplifier, and a recording oscillograph; and it measures and records the prevailing tension on yarn.

A hand tensiometer does a similar job as a tension analyzer; but modern electronic analyzers record the information for study, respond to faster moving yarn, and have extreme sensitivity.

The instrument measures tension, but the operator must analyze the results.

Textile operations most applicable to tension analyzers are spinning, winding, throwing, warping, slashing, weaving, and knitting.

When you test traveler tensions, you may hold the transducer and accept a relative reading or you may use all pulleys to obtain a true reading. For the first method, hook the yarn around the measuring pulley and pull the transducer back slightly.

Because only a portion of the total tension is read, the sensitivity of the analyzer must be increased. Adjust the frequency control switch to maximum. With these settings, the analyzer is very sensitive and responds to vibrations.

The tension recorded is proportional to the angle of the yarn. Maintain this angle from spindle to spindle to obtain comparisons. To keep this angle, hold the bottom pulley with the thumb and forefinger of the left hand directly over the pigtail rivet.

Three pulleys cannot be used on untwisted yarn because the ends would come down. To get over this difficulty, make tests with twisted yarn. Feed the yarn into the front roll and on the bobbin. The yarn in the balloon will have more twist, but the real difficulty is the slowness of testing.

A 2x4-in. timber can be bolted to the frame, and the transducer clamped in a rigid testing position. This position gives excellent results.

Tension variations in spinning can be caused by spindles out of plumb, pigtails off center, warped rings, worn rings, and unlevel rings. Nicked rings are recognizable on the charts, but the other faults are difficult to detect.

How To Determine Traveler Life

One of the most practical uses of tension analyzers on travelers is the determination of traveler life by checking the width of the trace. Choose a test group of 20 spindles from a frame where the rings are believed to be normal.

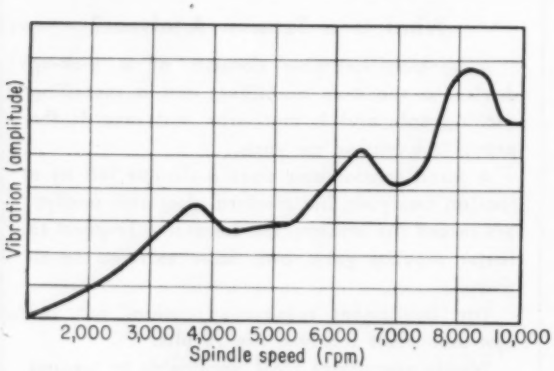
Install new travelers and make a tension check. The tensions will probably be a bit higher on new travelers until they are broken in. Make periodic tests depending on the expected life of the travelers. If the travelers run a week, one test per day is enough. If travelers last two or three days, make a test every shift.

The travelers should show their minimum tension over the life span. As the travelers wear, the chart will show a wider trace. If you are undecided how much tension increase is permissible, allow the travelers to run until they begin to burn and correlate with ends-down checks and evenness checks.

When a traveler doubles its tension, it is usually ready for changing. Blips on the chart are a good indication of the life of a traveler. If node rings are used, traveler wear is difficult to determine.

On large packages, the balloon usually rubs on the top flanges of the package and masks the friction of the ring. Watch the changes of tension as the ring rail traverses.

The tension usually increases at the top of the stroke because of the shorter balloon. A traversing pigtail relieves some of this tension. The tension must be measured from spindle to spindle at the same point of the traverse.



VIBRATIONS can be detected with tension analyzers. This graph, showing a hypothetical curve, points out how resonance occurs at different machine speeds.

Eliminate Changing Tensions

Changing tensions caused by the traverse can cause trouble and should be eliminated. Filling winds show the most variation. One mill was successful in selecting cams by watching tension patterns.

Uneven motions of the ring rail can often be seen on the chart, and a front-roll period is sometimes detected. One mill obtained an almost uniform tension pattern from the inside to the outside of the bobbin by a speed-control device.

Tension analyzers can also be used as vibration detectors. Connect a 1-v. crystal pickup to the d.c. amplifier with a shielded cable. Hold the pickup firmly against the spindle bolster, and watch the vibration on the chart.

Machine speeds, faulty bearings, unbalanced spindles, unevenly wound packages, and unbalanced bobbins show an excessive vibration on the chart. Vibration also increases when the machine speed increases. However, the vibration increase is seldom directly proportional to the speed increase.

For instance, if you run your frames at 8,900 rpm. because the frames vibrate at 9,000 rpm., the vibration may be better at 9,200 rpm. The vibration is also influenced by the package weight and must be taken into account in setting speeds.

Watch Tension in Packaging

Tension damage can occur as yarn is processed through the various packaging stages. Don't set all tensions to the optimum conditions and figure you are through. Rechecks and adjustments are necessary as conditions, stock, and styles change and machinery gets worn.

If ends-down trouble occurs in spooling, determine if the trouble is caused by tension or unevenness. If the trouble is tension, try adjusting the detector springs. Try a different wind on the supply package.

Warp winds show the least variation, followed by combination and filling winds. Equalize the pocket-to-pocket tensions. Perhaps just a few pockets are the troublemakers. Faulty or rough tension disks are pointed out.

In one mill, the detector springs were tightened five turns after all pockets had been set. Extra production was gained because 31,000 yds. of yarn was put on the cheese instead of the original 30,000 yds.

Watch These Points

When you operate a tension analyzer, watch the adjustment knobs that are exposed on the panel. An accidental bump can lead to many errors.

Advantages are sometimes gained by holding the pickup in the hand. The pickup must not distort the measurements by being held at various angles. At least three pulleys are necessary for this type of measurement.

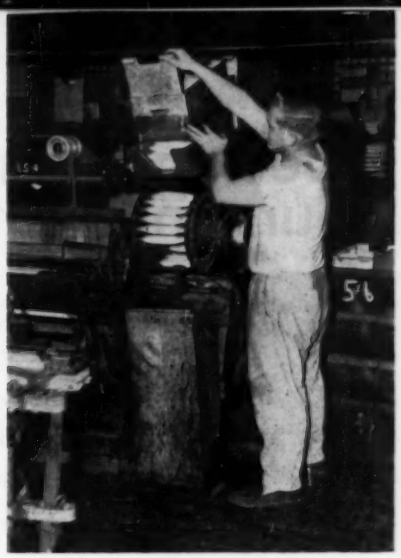
The pickup should be free from hysteresis, which means the pickup should return to the same reference under the same conditions. There should be no resonant periods within the measurable frequency range, and the pulleys must be perfectly round so they don't introduce patterns.

Don't allow charts to pile up on the floor as they emerge from the recorder. The charts can become entangled in machinery and destroyed.

A careful watch of these points and an integrated program of tension analysis through all operations will pay off in better yarn, fewer ends down, and higher production.

FILLING is doffed at spinning frames directly into metal boxes.

METAL GATE is opened when a box of filling is positioned at the loom.



New Filling-Handling System Cuts Batteryhand Cost 40%

• A new filling-handling system at two Alabama weaving mills has increased the number of batteries filled per batteryhand 40% without increasing the workload. Batteryhands now plug 800 to 850 bobbins per hour easily.

WITH A NEW FILLING-HANDLING SYSTEM at Opp Cotton Mills and Micolas Cotton Mills, Opp, Ala., filling is doffed into a metal box at spinning frames and is plugged into loom batteries from this same box.

The two mills are under the same management and have a combined total of 1,447 X-2 and X-model looms. Most fabric woven is sheeting and drills, and almost 1-million yds. are produced each week. The new system is used on all looms.

Batteryhands' jobs have been increased 40% without any increase in workloads. Now batteryhands easily plug 800 to 850 bobbins per hour.

No change has been required in doffing jobs in spinning, but there is an increase in labor cost of transporting filling and placing it on looms.

In the spinning room, the doffer places two of the filling boxes on his doff truck and doffs the filling directly into them. The bobbins are stacked straight in the boxes with the butt of all the quills on the left-hand side in convenient position for the batteryhand for greater ease in handling.

Each box holds 140 bobbins, which is all the bobbins from one side of a spinning frame. The filled boxes are stacked in boxes with casters for transportation to the weave room.

Each Loom Has a Rack

The boxes are placed in racks at the battery end of the loom. The rack is not attached to the loom but is fastened to the floor by a stand and braces made of pipe. This attachment method eliminates much of the vibration that damages the yarn in ordinary loom filling boxes.

Each rack holds two full boxes of filling and one empty box. When a batteryhand empties a box, she slides it backward on the rack. Then she pulls a full box down the sloping track of the rack into position just above the battery.

To make the job easier and to prevent a possible strain or accident, a short metal rod with a hook on one end is used to pull the full box into place.

Bobbins Are Fed by Gravity

A metal gate in the front of the box is removed, and bobbins are fed by gravity into a trough. The filling man removes the empty box and places another full one in position.

The savings in labor cost will pay for the installation of the boxes and racks in one year. When doff boxes and transfer boxes, or trucks, especially designed for these filling boxes are installed, there will be further savings in labor.

But one of the best features of the metal filling boxes is the elimination of much of the handling of individual bobbins. When conventional filling boxes were used and bobbins were dumped into these boxes, filling was often soiled and damaged. These defects are eliminated now.

After the filling boxes were installed, it was hard for loomfixers to see when a loom was flagged for them. So sets of flags with different colors for the loomfixers, warp men, and cloth doffers were attached to the box fronts.

Fiber and Yarn Research Spurs Interest at Cotton Clinic

Cotton Research Clinic reports presented at Asheville and briefed in this issue cover:

- Effect of overginning on manufacturing costs
- How short fibers harm yarn and fabric
- Effect of ginning on chemically treated fabrics
- How coarse and fine cottons can be blended

Other papers were digested in the July issue of TEXTILE WORLD.

Overginned Cotton Increases Labor and Processing Costs

- While grade is improved by elaborate seed-cotton cleaning, fiber properties are lowered and processing costs are increased. This study shows that overdried cotton ginned with elaborate equipment increased the cost of print cloth 2.5¢ per lb. for extra labor.

By **JOHN E. ROSS**, Agricultural Marketing Service, USDA

The most severe damage to fiber qualities resulted from extreme overdrying in combination with elaborate seed-cotton cleaning, bur extractors, and double lint cleaning. Large differences in fiber quality resulted from different moisture levels for the same overhead and lint-cleaner condition. However, within any one overhead condition and for any one moisture level, lint cleaners caused little or no change in most fiber-quality measurements.

Length of fibers was adversely affected by both elaborate overhead seed-cotton cleaning and extreme drying. At moisture levels of 4 to 6.5%, Fibrograph measurements of the upper-half mean length of fibers cleaned with elaborate overhead equipment was $\frac{1}{32}$ in. below that of fibers cleaned with the moderate overhead equipment.

When the moisture of cotton cleaned with the elaborate overhead was reduced to levels of 2.5 to 3%, the upper-half mean length was reduced an additional $\frac{1}{32}$ in. The use of lint cleaners showed no adverse effect on the upper-half mean. Although less consistent, the Fibrograph measurements of mean length showed trends similar to those of the upper-half mean.

Fiber strength measured at zero gauge gave no indication of changes in fiber properties. Strength measured at ⅛-in. gauge showed changes associated with extreme reductions in moisture that could be considered as being adverse to processing performance.

Micronaire fineness measurements indicated that the cotton was mature and well developed and that this factor was not affected by ginning treatments.

Moisture Content Is Significant

Arrays were made to determine length distribution and the proportion of short fibers present for all lots representing different ginning conditions. For ginned lint, reduction of moisture content was highly significant in increasing the percentage of fibers shorter than ½ in. when elaborate overhead cleaning was used. When lint moisture was at a level of 4% or better, neither differences in overhead treatments nor differences in lint cleaning caused a significant difference in the percentage of short fibers in the ginned lint.

Mill processing caused little or no change in the original short fibers of cotton ginned with moderate overhead-cleaning equipment, but processing appeared to increase short fibers in cotton ginned with elaborate equipment. In contrast to its effect on ginned lint, additional overhead cleaning had a highly significant effect on the creation of short fibers after the opener, picker, and card. The extra cleaning in this instance consisted of a bur machine and one seven-cylinder cleaner.

Short Fibers Cause Variation

The most important quality measurement in indicating processing performance was the proportion of fibers shorter than ½ in. in lint cotton.

Approximately 64% of the variation in ends down in spinning 30s yarn and 86% in spinning 40s yarn was accounted for by variation in the proportion of short fibers.

On the average, an increase of 1% in short fibers was associated with an increase of 13 ends down in spinning 30s yarn and of about 60 in spinning 40s. Again, the extreme treatment had a direct influence on results.

Among the lots subjected to less severe treatments, variation in short fibers accounted for 40 to 55% of the variation in ends down and an increase of about 20 ends down when short fibers incrseased 1%.

Short fibers also had a great influence on yarn strength. Variations among the test lots for this factor accounted for or were associated with 75 to 84% of the variation in break factors of test yarns.

About 42% of the variation in short fibers was associated with variations in lint moisture content at time of ginning. Although this correlation is quite high, findings also suggest that other factors are important in accounting for the remaining 58%.

The lots of cotton subjected to the most extreme drying and cleaning conditions had the highest number of loom stops. A high correlation existed between ends down and loom stops. About 45% of the variation in warp stops and over 95% of the variation in filling stops were associated with variation in ends down.

Break Factors Decrease

Average break factors for the two yarn numbers generally showed a decrease resulting from drying, overhead cleaning, and lint cleaning. Where higher grades were obtained by the use of all of these means, break factors usually were the lowest.

For the 12 lots included in the study, there was an inverse correlation; the highest grades had the lowest break factors.

Average yarn-appearance grades gave only a slight indication of the effect of ginning practices on this

CONTINUED ON PAGE 160

Effect of Ginning on Chemically Treated Fabrics

• Mills constantly complain that overginning deteriorates cotton fiber. This study, while not conclusive, indicates that current ginning practices have relatively little effect on the properties of bleached and resin-treated fabrics.

By **JAMES N. GRANT and FREDERICK R. ANDREWS,** Southern Regional Research Laboratory

Efforts were made to separate the relative effects of three ginning practices—seed-cotton cleaning, moisture level in drying, and extent of lint cleaning—as causes of fiber damage that contribute to difficulties in processing and reduction of fabric qualities.

Fabrics tested were 68x72 print cloth made from 30s warp and 40s filling according to commercial mill practices. Chemical processes used for desizing, scouring, bleaching, and resin treatment were pilot-plant and research procedures that follow industrial practices. ASTM test methods were used.

Results:

Seed cottons dried to the lowest moisture level before ginning produced the weakest gray fabrics.

Bleaching caused no accentuation of differences in breaking and tearing strengths that could be associated with ginning practices; strengths of all 12 fabrics were reduced about the same.

Resin treatment decreased the differences in strength among fabrics.

Moisture Regain for Lint and Fabric

	Lint		Fabric		
	Gin	Card sliver	Bleached	Resin treated	Resin add-on
Elaborate Seed-Cotton Cleaning					
Low moisture					
No lint cleaner	2.7%	7.5%	6.6%	5.7%	5.0%
1 lint cleaner	1.7	7.6	6.6	5.7	4.9
2 lint cleaners	2.9	7.5	6.7	5.7	5.1
High moisture					
No lint cleaner	4.4	7.7	6.7	5.6	5.3
1 lint cleaner	5.1	7.8	6.8	5.8	4.8
2 lint cleaners	5.6	7.6	6.6	5.7	5.0
Moderate Seed-Cotton Cleaning					
High moisture					
No lint cleaner	6.8	7.6	6.6	5.7	4.9
1 lint cleaner	5.5	7.6	6.6	5.7	4.9
2 lint cleaners	4.6	7.3	6.6	5.8	4.8
Very high moisture					
No lint cleaner	7.4	7.6	6.7	5.7	5.2
1 lint cleaner	6.8	7.7	6.7	5.7	5.0
2 lint cleaners	6.4	7.6	6.6	5.6	5.3

MOISTURE REGAIN for sliver and fabrics was measured under controlled conditions at 70° F., 65% r.h. For gin lint, regain was calculated from moisture content of cottons reported by the Agricultural Marketing Service, USDA. Resin add-on is expressed as percentage increase in dry weight.

Ginning Effects on Properties of Fiber and Cellulose

	Cellulose density (grams per cc.)	Dye differential (rank)	Degree of polymerization		Alkali swelling (%)	Micronaire fineness
	Fabric	Fabric	Fabric	Lint	Lint	Lint
Elaborate Seed-Cotton Cleaning						
Low moisture						
No lint cleaner	1.5453	3	2,860	.....	200	4.5
1 lint cleaner	1.5454	4	2,700	.....	196	4.7
2 lint cleaners	1.5447	4	2,910	4,710	204	4.4
High moisture						
No lint cleaner	1.5428	3	.....	.....	200	4.5
1 lint cleaner	1.5418	3	.....	.....	198	4.5
2 lint cleaners	1.5428	1	2,880	4,590	192	4.7
Moderate Seed-Cotton Cleaning						
High moisture						
No lint cleaner	1.5416	2	2,890	4,390	194	4.7
1 lint cleaner	1.5426	1	.....	.....	189	4.8
2 lint cleaners	1.5431	2	.....	.....	191	4.8
Very high moisture						
No lint cleaner	1.5433	3	2,910	4,610	195	4.5
1 lint cleaner	1.5413	2	.....	.....	193	4.6
2 lint cleaners	1.5425	2	.....	.....	190	4.8

FIBER AND CELLULOSE PROPERTIES generally were more closely associated with fineness than with ginning practices. Only one dyed fabric made from 4.4 to 4.6 Micronaire cotton was ranked as acceptable, compared with five fabrics made from 4.7 to 4.8 cottons. Colors ranged from red (1) to greenish (4).

Density of cellulose was slightly higher for the three lots dried to the lowest moisture level.

Moisture Regain Was Not Affected

Moisture regains of the bleached fabrics were essentially equal.

Alkali centrifuge-swelling values were more closely associated with fiber fineness than with ginning practices.

Among the fabrics, differential dyeing detected differences associated with fiber fineness but not with ginning practices.

Degree of polymerization was reduced by bleaching but showed no consistent relation to seed-cotton treatment.

Inconsistencies between samples within groups prevented conclusive evidence of effects of cleaning.

Specific results of the tests are shown in the accompanying tables.

Short Fibers Are Harmful To Yarn and Fabric

• Tests show that 3/8-in. or shorter fibers cause a general deterioration in yarn and fabric strength and other properties. Elongation does not appear to affect fiber interaction.

By JOHN D. TALLANT, LOUIS A. FIORI, and DOROTHY C. LEGENDRE,
Southern Regional Research Laboratory

The effect of short-fiber content of cotton on yarn and fabric properties and processing efficiency was investigated to a limited extent by cutting sliver into ¼- and ½-in. segments and adding the resulting short fibers to the parent cotton.

Results indicate that the short fibers are detrimental to virtually all yarn and fabric properties. A 1% increase in fibers shorter than ⅜ in. caused a strength loss in yarns of somewhat more than 1%.

An analysis made of array data to determine the short-fiber content of 43 cottons showed that percent-weight less than ⅜ in. varied from 2.5 to 12.5%. Ratio was 5 to 1, and the

average value was 6.7%. For this study, ⅜ in. was selected as a measure of short fibers.

How the Test Was Made

About 150 lbs. from each of two bales of Bobshaw cotton was used for the test. The short-fiber content of each was low, and the two lots differed widely in fiber elongation.

The short fibers were carefully mixed into the parent cotton at the picker apron in approximately 7-lb. lots for each fiber level. Three levels of short-fiber content were made up of ¼-in. fiber or of equal parts of ¼- and ½-in. fiber.

The lots were processed normally along with a control lot, and samples were taken at the second drawing for analysis because it was recognized that there might be considerable removal of the artificially added fibers at the card. The short-fiber content at the second drawing is the basis for all conclusions.

Each lot of cotton was spun into 14s, 22s, and 36s with the following twist multipliers: 3.5, 4.0, 4.5, 5.0, 5.5, 6.0. All physical tests were conducted under standard atmospheric conditions and in accordance with ASTM recommendations.

Strength Is Lower

The twist vs. break-factor curves were smooth in general and showed a uniform decrease in strength with increasing levels of short fiber. There appeared to be no tendency for the twist for maximum strength to significantly change as the short-fiber content was increased.

Skein break factor decreased somewhat more than 1% for each 1% increase in short-fiber content, and single-strand tenacity data showed a similar trend.

The strength coefficient of variation for individual lots did not show a completely smooth relationship, but the general trend for all yarn sizes spun from both cottons was for the strength coefficient to increase with the addition of short fibers.

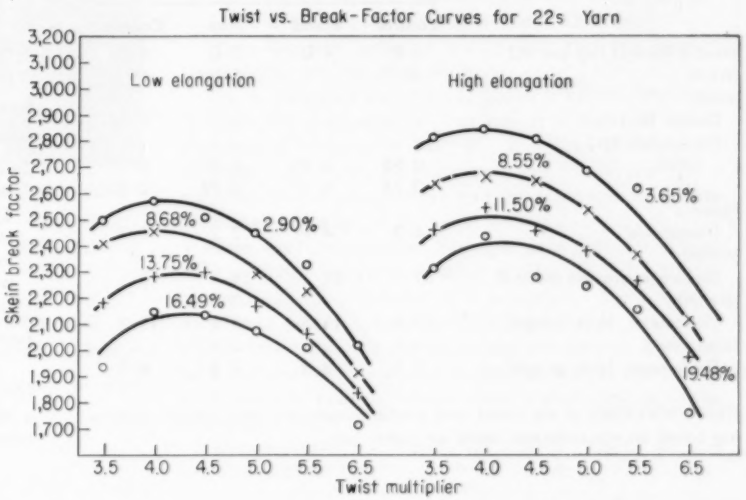
Single-strand elongations showed the normal tendency to increase linearly with increasing twist. For a given twist, the breaking elongation showed a uniform tendency to decrease with the addition of short fibers.

When the yarn containing the highest level of short fibers was compared with its control, single-strand tenacity was 14% less and breaking elongation was 10% less. These figures are average for all twists and numbers for both high- and low-elongation cottons.

Evenness Decreased

Evenness went down uniformly as short fibers were added. Yarn grading boards showed a decrease from about A− to C+ in appearance as short fibers were added.

Fabrics made from both high- and low-elongation cottons showed a progressive deterioration of all properties as the short-fiber content increased. Strip breaking strength, tear resistance, and flex abrasion all were degraded by approximately equal or greater percentages than the strength degradation in the yarn.



BREAK FACTORS decreased uniformly with the increasing levels of ¼-in. fiber, but twist for maximum strength did not change significantly. Short fiber added is shown in terms of percent.

Coarse and Fine Cottons Can Be Blended Successfully

• Two cottons with Micronaire readings of 3.0 and 6.0 were blended to form a 4.0 mix. Spinning efficiency was comparable with control cotton having a natural fineness of 4.0.

By LOUIS A. FIORI, GAIN L. LOUIS, and JACK E. SANDS,
Southern Regional Research Laboratory

The blending of extremely fine and coarse cottons was investigated as a possible way of economically using these difficult-to-market cottons.

Two cottons differing appreciably in fiber fineness (Micronaire values

3.0 and 6.0) but having other pertinent fiber properties about equal were blended together to produce a mixture averaging about 4.0 μg. per in. in fineness. For comparative purposes, a control cotton also averaging about 4.0 μg. per in. fineness was used.

The blended and control cottons were spun into coarse and medium yarns of varying twists and into yarn numbers suitable for weaving Type 128 64x64 sheeting. The spinning efficiency of the two cottons was evaluated on a pilot-plant basis in terms of ends down per thousand spindle hours.

Processing Results Are Similar

Waste, nep count, yarn properties, (skein and single-strand strength, break elongation, uniformity, and grade) and end-breakage rate at spinning were similar for the blended and control cottons.

Microscopic examination of yarn cross sections did not reveal any migratory tendencies of either the fine or coarse fibers. For the same yarn number the blended and control cottons produced yarns of similar diameters and softness values.

Some of the test results are shown in the accompanying tables and chart.

Summary of Fiber Properties

	Cottons			
	Control	Blend	Fine	Coarse
Weight fineness (μg. per in.)	4.0	4.0	3.0	6.0
Grade	M	....	SM	M
Length				
Classer (ins.)	1	....	1	1
Fibrograph (ins.)				
UHML	0.95	0.98	1.02	0.99
ML	0.75	0.77	0.76	0.82
Fineness (Micronaire)	4.0	4.1	3.2	6.2
Maturity (Sodium-hydroxide method)	69	69	58	92
Strength (Stelometer, 1/8-in. gauge)	17.8	18.3	17.8	19.2
Elongation (Stelometer, 1/8-in. gauge)	7.9	8.5	7.5	8.2

FIBER PROPERTIES of the blend and control cottons are very similar. Figures are based on measurements made on picker laps.

Comparison of Picker and Card Waste

	Cottons	
	Control	Blend
Weight fineness (μg. per in.)	4.0	4.0
Breaker picker	0.74%	0.48%
Finisher picker	0.41	0.19
Card		
Flat strips	2.66	2.90
Cylinder and doffer strips	0.59	0.78
Motes and fly	1.30	1.19
Sweeps	0.22	0.24
Invisible loss	0.49	0.67
Total card waste	5.26	5.80
Total picker and card waste	5.93	5.99

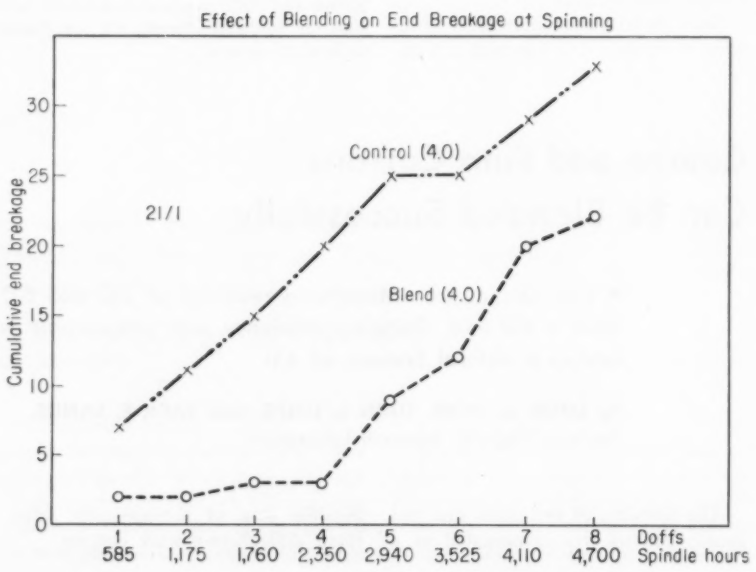
TOTAL WASTE CONTENT for picking and carding is about the same for both the blend and control cottons. Nep content is comparable.

Effect of Fineness on Roving Twist

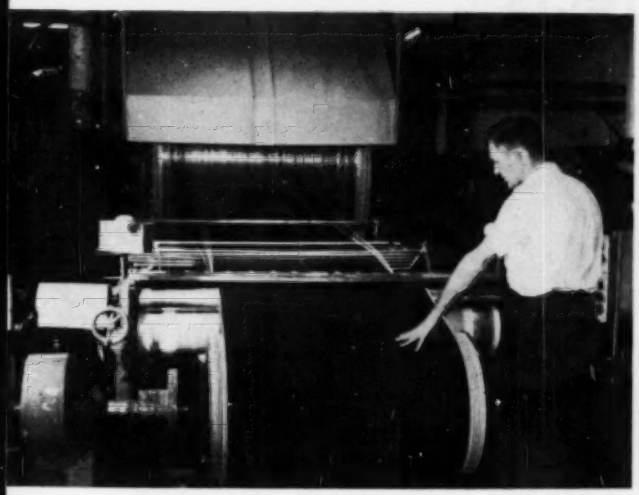
Cotton lots	30 lbs.	330 lbs.
Twist multiplier		
Control (4.0)	1.00	1.09
Blend (4.0)	1.06	1.09
Fine (3.0)	0.95	....
Coarse (6.0)	1.16	....

ROVING TWIST is approximately the same for the blend and control cottons in both small and large lots.

ENDS DOWN at the end of eight doffs was 10 in favor of the blend. However, Chi-square measurement indicates that the difference is not significant at the 95% probability level.



Slashing Colored Warps Requires Special Equipment



COLORED YARN comes from the final drying cylinder with an average of 12% size content.

• Avondale Mills has the latest controls and recorders at its Eva Jane Plant to slash colored warps uniformly. Predryers also help control size uniformity.

SLASHERS AT AVONDALE MILLS' EVA JANE PLANT, Sylacauga, Ala., have been specially equipped to size colored cotton warps efficiently. Equipment is automatic controls and recorders, overhead yarn-beam handling, special creels, and homogenizers.

Drying units are two cylinders 7 ft. in diameter and one 5 ft. in diameter. Some of the seven slashers have predrying cylinders between the creel and size box to dry wet or damp dyed yarn. These predryers remove excess moisture from the yarn to insure maximum and uniform size penetration.

The first regular drying cylinder (5-ft. dia.) is maintained at a steam pressure of 3 psi., and the other two cylinders are held at 10 psi. On average sets, the slashers run at 45 yds. per min.

Overhead Creel Is Portable

A portable creel on overhead tracks above the regular creel holds spools of selvage yarn. On some slashers, there is a stationary creel between the cylinder and the comb for metallic yarn and other yarns that do not have to be sized.

Regular creels have eight section beams. Bearings are ball-bearing pillow blocks, and friction is applied with weights on sash cords.

Two push-button control switches are on each side of a slasher so that it can be started or stopped from either side at both the front and back.

All slashers have multimotor drives, automatic moisture-content controls, and temperature controls.

Section beams hold 8,500 yds. of 14s yarn with 310 ends per beam.

Both size-box squeeze rolls are covered with wool yarn, and new yarn is added to the rolls each shift. Squeeze rolls weigh 500 lbs. each, and 400 lbs. of pressure is added to each roll pneumatically.

Yarn stretch is held between 1½ and 2%; moisture regain is 5 to 7%; size pickup is about 12%.

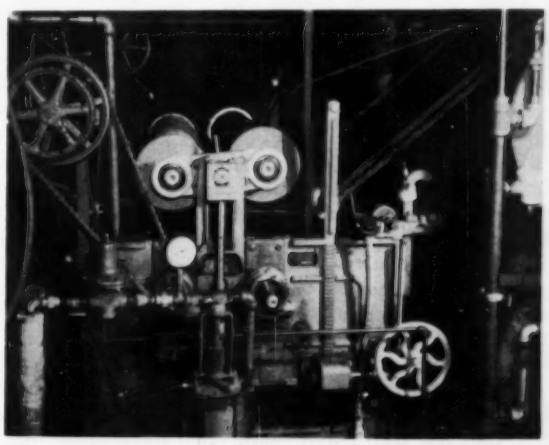
There are one operator per slasher and two helpers (back men) for the seven slashers.

Size is prepared in 250-gal. cooking kettles that hold 225 gals. of finished size. The size is brought to a boil and cooked 10 mins. at 211° F. It is then homogenized at 2,400 psi. Two homogenizers are used; one has a capacity of 300 gals. per hr., and the other has a capacity of 400 gals. per hr.

From the homogenizer, the size goes into a 500-gal. storage kettle where it is held at 200° F. It is then pumped into the size boxes as it is needed. The temperature in the boxes is maintained at 204° F.

Automatic controls and recorders are used to (1) prepare the size, (2) keep size in the size box at the proper level, and (3) hold the temperature of size constant in the size box.

Overhead rails and hoists are used to handle section beams and loom yarn beams.



PNEUMATIC PRESSURE insures constant size penetration in the yarn. Squeeze rolls are covered with wool yarn.

Checklist for Inspectors Reduces Sewing Defects

• This checklist tells you where to inspect goods during sewing, how many to inspect for adequate control, and when to inspect them

By HERBERT BROWNSTEIN

THE FIRST STEP in organizing a sewing inspection program is to find where controls are most urgently needed.

Select the point of inspection to reduce the cost of inspection without hampering its effectiveness. Inspecting only the correct number of samples further reduces the cost.

Inspect finished articles as near the packaging operation as possible. Centralized inspection, where possible, offers good conditions of inspection, less interference, better supervision, and better facilities for controlling accuracy.

When Should You Inspect?

When to inspect is always a major problem, so inspect articles:

1. At the source of variation
2. Where errors would be most costly
3. To discover defective work that would affect a long series of subsequent operations
4. Prior to an operation that conceals a defect made in a previous operation
5. When material is transferred from one department to another

If sample inspections reveal more than permissible defects, give all goods 100% reinspection.

After a machine has been set up and before the operator starts production, have the foreman check the first few garments.

Even though a worker is paid only for accepted goods turned out, this system does not keep rejects down. In addition, have the supervisor watch the operators.

But don't give operators the feeling of being spied on. Inform operators of work subject to inspection. Correct rather than reprimand when errors are discovered. Allow fellow workers to inspect.

On routine inspection work where speed and accuracy are desired, use a guaranteed hourly rate with a bonus for output. Adequate control may require 100% inspection at first, but inspection is reduced as performance becomes more dependable.

Inspection Keeps Goods Moving

Lay out inspections to interrupt as little as possible the smooth flow of production. Move materials from one operation to the next automatically with minimum handling.

Design individual inspection benches and chairs for maximum ease of operators. Use circular inspector's benches to conform with the normal sweep of the arms to keep inspectors from continuously bending forward.

Where small pieces are inspected, use feeding devices or place parts within easy reach of the operators with containers in tilted positions on the benches.

Chutes are the simplest way to dispose of inspected parts. Two holes in the bench with chutes to disposal boxes let inspectors drop accepted goods in one receptacle and rejected goods in another.

Eliminate wasteful motions where an inspector uses one hand to hold the goods and the other hand to inspect them. An automatic or foot-operated device leaves both hands free for productive work.

Control Charts Reduce Cost

Install systematic inspection of purchased materials, and identify materials in an orderly way so that lots from one supplier will not be mixed with other shipments.

Ues control charts to reduce rejects, predict trouble, reduce inspection cost, and narrow tolerances. In the chart, include the total daily production, the number of dozens inspected, the number of dozens found defective, the number of dozens repairable, and the number of seconds.

Also put the average quality levels and customer complaints into this report.

Specify performance requirements such as washing and shrinkage. Describe a test for each item with the maximum and minimum allowance.

Keep Inspectors Informed

Where possible, include samples of minimum allowable quality such as a piece of cloth showing maximum allowable faults.

In sampling inspection, list the number of samples to be tested for each sewed article.

Keep a record of the actual measurements of the characteristics for individual articles, the number of articles, and the number of defective articles.

Divide quality characteristics into two groups: (1) where 100% inspection is practicable and (2) where fewer inspections are adequate.

Draw up master standards of all measurements and post them so that they are available to operators and inspectors all the time.

THE NEED: Special lacquers to resist coning oils

A Sonoco customer wound a quantity of yarn on lacquer-tipped cones and then stored the finished packages. During the months of storage the coning oil attacked the lacquer tip causing the lacquer to bleed on the yarn. Additionally, the cone wrap stuck to the lacquer and pieces of paper were left on the tip when the wrap was removed. These conditions caused the yarn to snag and break during the take-off.

Sonoco research chemists, because of past experience with similar problems, promptly developed a new type lacquer which will prevent a reoccurrence of this problem when the same oil is used.

Developments of this nature are "all in a day's work" at the Sonoco research laboratory. If you have similar problems, consult your Sonoco representative.

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442

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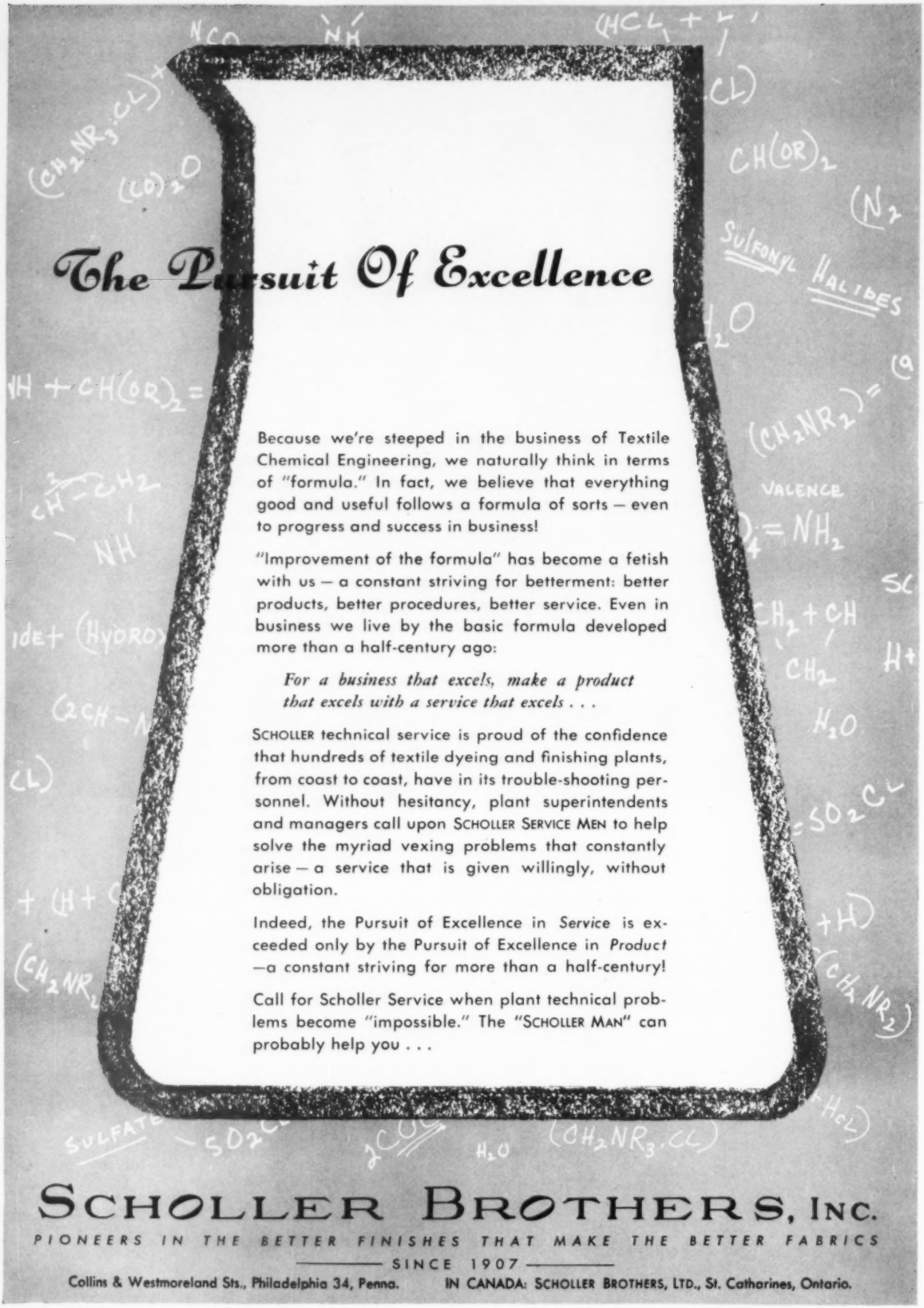

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Textile World

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IN THIS SECTION

THIS MONTH'S DEVELOPMENTS

Textile Chemicals 61

New Dyes and Chemicals 64

BLEACHING, DYEING, FINISHING

Adaptability Pays Off for Lanett Bleachery. Since its start in 1895, this Alabama plant has kept busy by anticipating market changes and by pushing lines that are currently popular 66

COLOR MATCHING

Why Color Matchers Differ. Experiments conducted by the National Bureau of Standards show why experienced color matchers see the same shade differently 67

PRINTING

How To Choose a Pigment-Printing System. By taking advantage of the good points of both common pigment-printing systems, you can often turn out a better job 71

PREPARATION & BLEACHING

5. How Preparation Methods Developed. The alkaline scour. The functions of caustic soda and assistants. What produces good absorbency and whiteness 74

DYEING

The Basic Chemistry of Dyes and Dyeing—VI. Vat dyes —Their principal types. Soluble variations. Basic application methods 85

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New Vat- and Sulfur-Dyeing Methods—

Soluble vat dyes and vat dyes in the acid-leuco state can be successfully applied to acrylic or polyester fibers by methods disclosed in U. S. Patent 2,890,092 to Henry R. Mautner and assigned to General Aniline & Film Corp.

The basic principle of the patent is the inclusion in the dyebath of an N-lower alkyl-2-pyrrolidone compound as a dyeing assistant.

A typical procedure for acrylic-fiber fabrics is based on padding the goods in a dyebath made up of the soluble vat or acid-leuco vat and containing 5 to 20% on the weight of solution of N-methyl-2-pyrrolidone. The dye is usually dissolved before the pyrrolidone compound is added. The larger amount of N-ethyl-2-pyrrolidone is suggested for leuco vat esters, but 5 to 15% is sufficient for the acid vats. Dyestuff concentrations will vary between 1 and 8 oz. per gal., according to the shade.

Any of the customary dispersing or solubilizing agents that are used in this type of dyeing may be included. The usual oxidizing, soaping, and rinsing procedures for the dye at hand are followed.

Dyeings made by this procedure are claimed to be level and to have good fastness to light, washing, and drycleaning. Polyester fibers are satisfactorily dyed by similar dye formulations that include N-methyl-2-pyrrolidone.

Sodium tetraborate is the medium employed to drive vat and sulfur colors onto acrylic fabrics in U. S. Patent 2,890,093, also issued to Henry R. Mautner and assigned to General Aniline & Film Corp.

In a typical procedure, from 8 to 15% of sodium tetraborate is deposited in the acrylic-fiber material from a hot aqueous solution.

A reduced solution of the vat dyestuff is then applied at 200 to 220° F., and the goods are held 30 to 90 mins. to insure complete absorption. Then the usual oxidation, soaping, and rinsing procedures are followed.

Alternately, fibrous material may be saturated in a solution containing the necessary amount of sodium tetraborate and the sulfur or vat dye in pigment form. After a 10-min. saturation period at 120 to 130° F., the temperature is raised to 150° F., the usual reducing agents are added, and the liquor is circulated through the fiber for 60 to 80 mins. Then the mass is rinsed, oxidized, and soaped in conventional ways.

Dyeings made with vat and sulfur dyes with the aid of sodium tetraborate are claimed to have good all-around fastness; and when stock dyeing is necessary, it is an advantage to be able to dye without pressure and very high temperatures.

New Assistants Aid Triacetate Printing—

Triacetin and some other esters of polyhydric alcohols have been discovered to be valuable in fixing colors that have been printed on triacetate fabrics. Azo, anthraquinone, and the nitrophenylamine disperse dyes, as well as some premetallized, naphthol, and oxidizing colors such as aniline black, give better results when these esters are included in the print paste.

The further addition of zinc thiocyanate to the print paste makes it possible to use less triacetin or similar material to get equal results.

A satisfactory printing paste will contain color, gum Arabic or Senegal, 10% zinc thiocyanate, and 3 to 10% of triacetin. Gas-fading inhibitors such as diphenylacetamidine can be added if the dyes are sensitive to atmospheric gases.

Fluid Beds Speed Dyeing—

The fluid beds developed by British Rayon Research Assn. [Textile World, Nov. '58, p. 83] are now being used to speed up the dyeing of hydrophobic fibers of all types.

Fabrics made from Dacron, nylon, Arnel, and secondary acetate can be dyed to deep shades in a few seconds when they are padded with a suitable dye and passed through the heated fluid beds.

About 10 secs. exposure to a fluid bed maintained at 195° C. is enough to produce excellent results.

The goods are soaped after dyeing to remove

surface color and any entrained siliceous particles.

The padding liquors are made up with 5 to 12% of a dyeing assistant such as glycerine to promote rapid dye assimilation. Diacetin or triethanolamine may also be used for this purpose. All these materials are readily washed out in the soaping process and do not affect lightfastness of the shades. On nylon and Dacron, dye absorption is increased 30 to 40% by the addition of glycerine or diacetin; somewhat less so by triethanolamine.

Modified Wheat Flour Shows Promise—

Wheat flour that has been treated with ethylene oxide to form hydroxyethylated flour mixes readily with water and cooks up into free-flowing pastes. Similar results have been obtained by reacting wheat flour with propylene oxide.

The starch pastes made from these modified wheat flours have less tendency to thicken and gel than pastes made from normal wheat flour and should be valuable in various phases of textile processing.

The experimental work was done by the Agricultural Research Service of USDA.

Stretch Affects Wool Dyeing—

Uneven tension produced in winding woolen yarns on pirns or cops has recently been found to be the cause of faults in piece-dyed fabrics.

Streaks and stripes not visible in the gray goods show up when the fabric is relaxed in wet processing and may range from simple surface effects to actual shade variations.

The stretch retained in woolen yarns that are wound wet is considerably more than for dry wound yarns, and the storage time under tension is also important. Retained stretch increases up to two weeks and then remains fairly constant for four months.

Where woolen yarns are known to have been wound under varying degrees of tension, rewinding under greater tension than previously used will even up the residual stretch and eliminate the dyeing and finishing troubles mentioned.

How Soaping Affects Vat Dyeing—

Soaping makes physical changes in the structure of vat dyes applied to fabrics that are important to good performance.

Recent studies of vat dyeings on several types of regenerated-cellulose materials showed that after oxidation some vat-dye molecules are single and are held in the fibers with their length parallel to the cellulose chains, while others are distributed at random.

During the soaping operation, many of the former type of dye molecules go into colloidal solution and migrate to convenient sites for aggregation and crystallization. Some remain locked in the positions at which they were oxidized during dyeing. The final shade of a vat dyeing is determined to some extent by the distribution of dye as single molecules, aggregates, and crystals.

In the crystalline form, dye particles are less readily reduced or soaped out in further laundering. Crystallization is rarely complete, but a thorough soaping helps to stabilize the colors during service life.

New Method To Control Wool Shrinkage—

Wool fabrics can be made dimensionally stable to laundering by treating them with a solution of a polyamide, followed by a curing operation with a polyepoxide.

The process does not alter the color of the wool, either white or dyed, and has no discernable effect on hand, resiliency, or other normal characteristics of the fabric.

In practice, the woolen goods are impregnated with a solution of a polyamide such as that produced by condensing diethylene triamine with an unsaturated heat-dimerized fatty acid. The poly-

amide is applied in emulsion form by padding or spraying. From 0.5 to 10% of the polyamide should be deposited, based on the weight of the goods. The fabrics may be dried or exposed at once in a chamber to the vapors of a polyepoxide such as butadiene dioxide. At room temperature, the curing action of the butadiene dioxide may require 72 hrs.; higher temperatures will reduce the curing time. Laundering tests made on woolens treated in this way showed that where the goods contain 4 to 5% of cured polyamide-polyepoxide compound, shrinkage due to laundering for 3 mins. in a 5% soap solution at 40° C. was nil.

The process is also applicable to cotton, acetate, rayon, and linen fabrics. The method was developed by Thomas J. Coe.

Ketones Cut Brittling Effect of Resins—

Water-soluble ketones such as acetone, butanone, diethyl ketone, mesityl oxide, or diacetone alcohol are effective in reducing fiber brittleness caused by resin finishing.

According to British Patent 813,794, issued to Courtaulds, Inc., U.S.A., 5 to 10% of such materials added to the resin bath reduces water imbibition of rayon fabrics up to 60% without any fiber embrittlement. A typical formulation includes 4% melamine precondensate, 1.25% softening agent, 0.75% magnesium chloride as a catalyst, and 5% of acetone.

Rayon fabrics are steeped in this solution for 2 mins., extracted, dried at 100° C., and cured at 166° C. for 7 mins. The final water of imbibition is only 41%.

New Test Pegs Level-Dyeing Colors—

Premetallized dyes of the Cibalan type can be checked for their level-dyeing qualities by a method developed at Ciba Clayton Co. Ltd.

To make the test, a boiling dyebath is prepared with the requisite amounts of dye and assistants for dyeing 10 units of wool fabric. A unit may be any convenient size for laboratory test purposes. A piece equal to four units is entered in the dyebath; and further one-unit pieces are entered at intervals of 2, 4, 8, 16, 32, and 64 mins. after the start of the dyeing.

The bath is kept at the boil for a further 56 mins. The dyed pieces are then rinsed, dried, ironed, and compared visually.

If there is a gradual tapering off of the shade, the dye is considered to have good strike-migration properties and is likely to dye levelly, and vice versa. The test is also valuable in predicting the performance of mixtures of dyes that will be required to produce a given shade.

Did You Know . . .

. . . that calcium chloride won't cause acid damage during drycleaning to garments that may be spotted with the chemical?

Previous reports to the contrary have been refuted by Dr. Joseph R. Wiebush, research director of the National Institute of Drycleaning after many tests showed that calcium chloride was harmless to fabrics.

•

. . . that silk can be degummed with alkylaryl sulfonates boosted with soda ash? Time-honored olive-oil soap solutions used for the purpose may lose ground to a method developed in Poland that uses 15 grams per liter of an alkylaryl sulfonate plus enough soda ash to make the bath alkaline. Excellent degumming is obtained by treating raw silk at the boil for 2 hrs. at 100° C.

•

. . . that mercerization improves the resistance of cotton to hydrolytic degradation? Workers in India found that mercerized cotton resisted the effects of sunlight, chlorine bleaching, acids, and weathering better than unmercerized goods. An interesting anomaly of the investigation was the fact that although the mercerized fabrics had higher tensile strength than plain cotton after exposure to weak acid, the fluidities were much higher. As an example, samples of plain and mercerized fiber exposed to weak HC1 until their tensile strength had been reduced to 60% of the original showed that fluidity for plain fiber was 17 and for mercerized fiber 31.

NEW DYES AND CHEMICALS

Brightening Agents

Phorwhite BBU Powder . . . can be applied by padding or in the dyeing machine to produce neutral brightening effects on cellulosic fibers. The product is very soluble, has good washfastness, and is not sensitive to hard water. Electrolytes help exhaust the brightener. Best results are obtained on nylon at high temperatures and at a pH of 3.5 to 4.5.

Phorwhite BE Powder . . . is particularly suitable for producing a neutral cast of white and is of special value in applications where a short liquor ratio is required, such as in kier bleaching and package dyeing. The product levels well and is very soluble. Verona Dyestuffs, Springfield Rd., Union, N. J. **(Circle D-1 on Reader-Service Card)**

Disperse Dye

Artisil Foron Brilliant Yellow 6GFL Pat. Ultradispersed . . . is recommended for the production of brilliant greenish-yellow shades on man-made fibers.

The color has excellent fastness properties and is especially suitable for use on polyester fibers. The extremely small particle size of 0.5 to 1.0 micron indicates usefulness in package dyeing and printing. Sandoz, Inc., 61-63 Van Dam St., New York 13, N. Y. **(Circle D-2 on Reader-Service Card)**

Softeners

Basosoft SG 100% . . . is an anionic softener recommended for producing soft, scroopy hands with good antistatic effects on man-made fibers and fabrics. Type 1195 is especially stable to acids and Type 1200 is particularly suitable for acetate finishing.

Basosoft HS . . . is a cationic softener that is used mainly for finishing cotton, cuprammonium, and viscose made into knitted fabrics, and for nylon hosiery.

Basosoft MW . . . is cation-active and suited especially for finishing tricot fabrics, hosiery, and yarns and as a preparatory treatment for rayon staple.

Basosoft HT . . . is anionic at pH 7 to 11 and cationic at pH 4 to 6. The product is stable to heat and is especially valuable as a yarn finish when the yarn is to be dried in package form at high temperatures. The softener is also recommended where resistance to heat-setting is required and as a finish for cotton goods that will be schreiner calendered.

Basosoft TS . . . produces a full soft hand on fibers, yarns, and fabrics made of cotton or rayon. Stability to hard water is limited, and the product is used mostly in combination with stiffening materials.

Basosoft UV . . . is anionic and is recommended for producing soft, full hands on rayon fabrics and yarns, fabrics made of blends of rayon and wool, and wash-and-wear finishes. Putnam Chemical Corp., Beacon, N. Y. **(Circle D-3 on Reader-Service Card)**

Vat Dye

Sandothrene Direct Black NDPN Double Paste Ultrasperse . . . produces jet-black shades that have unusually good fastness to light. The dye is recommended for package dyeing because of its small particle size. Other applications for which the dye is suitable are stock, piece, beam, and skein dyeing. Sandoz, Inc., 61-63 Van Dam St., New York 13, N. Y. **(Circle D-4 on Reader-Service Card)**

Resin Base

Atco EUS . . . is a dry, free-flowing ethylene urea that contains very low amounts of insoluble matter. In combination with suitable amounts of formaldehyde or paraformaldehyde, useful resins for textile and other purposes are formed. Metro-Atlantic, Inc., Centredale 11, R. I. **(Circle D-5 on Reader-Service Card)**

Antistatic Agent

Aston AP . . . is a cationic polyamine that affords efficient nondurable protection against static-charge formation. The product also produces a soft, drapy hand on fabrics to which it is applied and is readily soluble in water and a wide range of organic solvents.

The finish will increase moisture absorbency on hydrophobic-fiber fabrics and is suggested as a top finish for resin formulations that tend to accentuate static buildup. Onyx Oil & Chemical Co., Jersey City, N. J. **(Circle D-6 on Reader-Service Card)**

Vat Dyes

Calcoloid Jade Green NC Supra Double Paste . . . produces exceptionally bright shades of jade green on a variety of fibers and dyes good unions on cotton and viscose. The dye has the all-around good fastness of its class and is easy to apply at elevated temperatures on all types of dyeing equipment.

Calcoloid Brown RRP Paste . . . is particularly effective in printing under most dyeing conditions. Both flash and conventional steam printing produce true, full-strength shades.

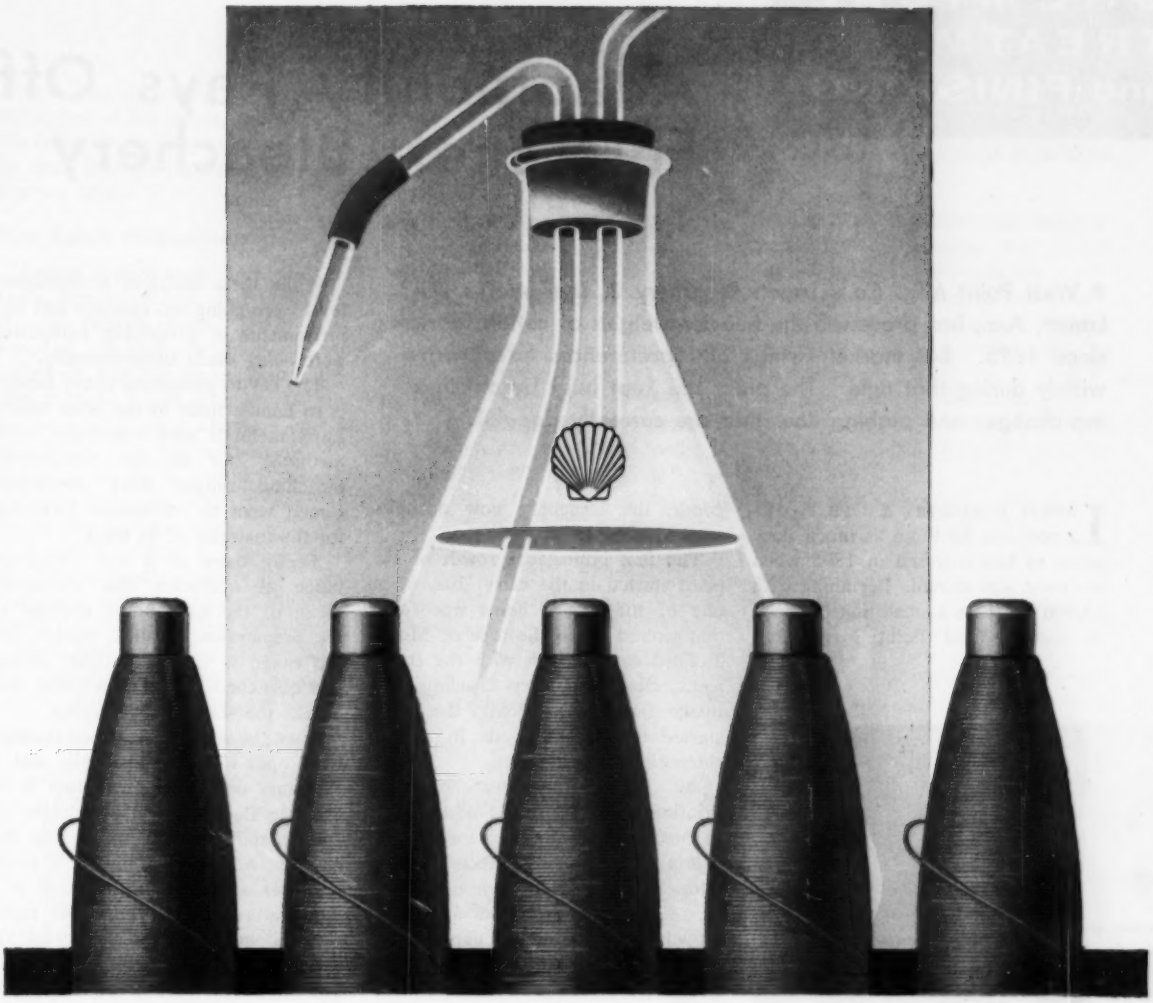
Calcoloid Brown GL Double Paste . . . is an improved dye that is particularly resistant to migration during the drying of pigment-padded cloth. Dyeings have excellent surface appearance and uniformity by the pad-steam method.

All three dyes are thin, nonsettling pastes of controlled particle size. American Cyanamid Co., 30 Rockefeller Plaza, New York 20, N. Y. **(Circle D-7 on Reader-Service Card)**

Thickener

Natrosol 250 . . . is a nonionic water-soluble hydroxyethyl ether of cellulose that is available in four viscosity types. The product is suggested for the production of polyvinyl-acetate emulsions, textile sizes and finishes, and latex emulsion for adhesives and coatings.

Solutions formed with the material are clear and are resistant to salts, acids, or alkalis. Hercules Powder Co., Wilmington 99, Del. **(Circle D-8 on Reader-Service Card)**



How Shell Chemical serves the textile industry

Chemicals play a vital role in the textile industry. Having the right chemical for the job helps produce *better* fabrics. Shell Chemical is a convenient, dependable source for the chemicals listed at the right.

Hydrogen peroxide serves as a rapid, economical bleach and as an oxidizer for making vat colors brighter. Acetone is a spinning solvent for acetate rayon. Glycerine is a popular moistening agent for fibers and for textile printing compositions.

Eponite® 100 is a very effective, non-chlorine retentive resin for production of minimum-care fabrics. It imparts increased wrinkle resistance to cottons and rayons and reduces rayon shrinkage to a fraction of one per cent.

• • •

A Shell Chemical representative will be glad to discuss your specific needs. Write your nearest Shell Chemical district office for samples and technical literature.

Acetone
Eponite 100
Ethyl Alcohol
Glycerine
Hexylene Glycol
Hydrogen Peroxide
Isopropyl Alcohol
Methyl Ethyl Ketone
Methyl Isobutyl Ketone
Sodium Sulfonates

SHELL CHEMICAL CORPORATION
INDUSTRIAL CHEMICALS DIVISION

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SHELL

Adaptability Pays Off For Lanett Bleachery

• West Point Mfg. Co.'s Lanett Bleachery & Dye Works Div., Lanett, Ala., has processed the heavier weights of cotton fabrics since 1895. But market swings and preferences have varied widely during that time. The plant has kept busy by anticipating changes and pushing lines that are currently popular.

LANETT BLEACHERY & DYE WORKS now has 30 times as much floor space as was required in 1895 when the plant was started. Beginning with 15,000 sq. ft. as a small unit designed to handle West Point Mfg. Co.'s goods, the bleachery now occupies over 425,000 sq. ft. of space.

The first important growth of the plant started in the early '20s, when one of the largest items was twills that wound up in the tops of Model T Ford cars. Along with the drills, jeans, crash and terry toweling, and ducks from West Point, the plant started to process goods in similar categories for converters.

By 1934 a new bleachery and printing department had been added as business grew, and draperies and sports fabrics were included in the lines. Also, a shift from open cars to sedans had produced a healthy growth in the amount of napped flannels that were being used as headlinings for the closed cars.

As fabric headliners waned in popularity, Lanett began expanding its business in the work-clothing field. Today these fabrics make up about half the production potential of the plant to the tune of over half a million yards per week.

While these shifts in predominant lines were going on, changes and improvements in processing equipment were being made simultaneously.

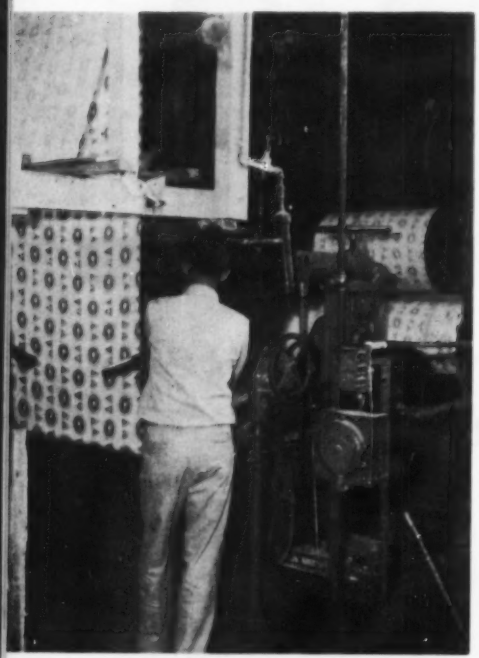
The key to processing heavy fabrics is to handle them in the open width. Early methods were essentially batch methods; but as the continuous-bleaching ranges were developed, Lanett went to continuous bleaching for the majority of its work.

Today there is a new two-stage range in operation that eliminates much of the stop-and-go entailed in jig preparation. Fabric routed for the range is first thoroughly singed and quenched in a malt solution that digests the starch in the sizing.

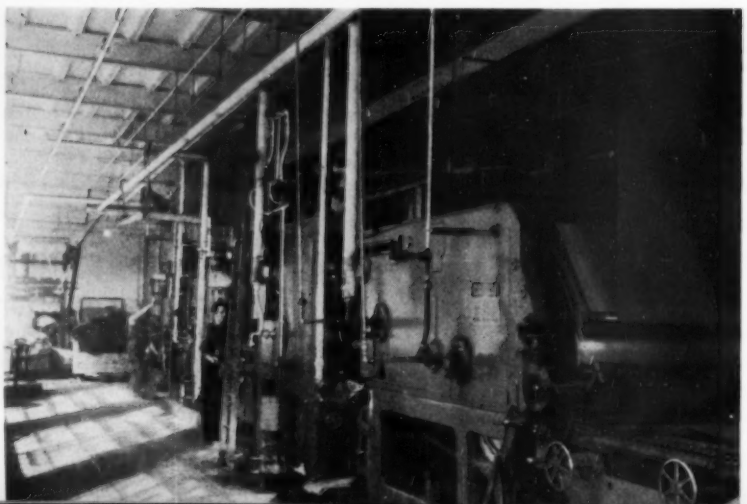
Then the goods are washed through four open-width wash boxes and a Williams unit. The next step is to saturate them in a 3% solution of caustic soda and pull them into the steamer, where they lie on a stainless-steel conveyor and are kept at a temperature of 210° F. for 45 mins.

After another thorough washing, the fabric is treated with peroxide and pulled into the second-stage conveyor for another 45-min. period at 210° F. The final step is to wash out residual peroxide, caustic, and silicate and dry the goods on a stack of cans.

The work-clothing fabrics are practically all mercerized to improve appearance and to increase dye recep-



LANETT FINISHES most of its production through pad-can-tenter ranges such as this. The ranges are located on the same floor with compressive-shrinkage machines.



THIS COMPRESSIVE-SHRINKAGE MACHINE is one of a battery of seven needed to handle the large proportion of goods finished to 1% shrinkage or less.

tivity. The operation is done on either wet or dry goods, according to the fabric and to how mercerizing can be fitted into the processing steps for a given style.

Fast Colors Predominate

Lanett applies vats, sulfurs, naphthols, mineral colors, and developed dyes by various means. The bulk of long-run lots that are going into vat colors is handled on a long range that includes a pad to apply vat pigments, a predryer, a chemical pad in which the pigment is charged with reducing agents, a steamer to complete the reduction, and a 10-box oxidizing and washing setup.

A smaller range is used for the application of sulfur colors and naphthols and also as a second stage for goods that have been padded with vat pigment and dried. Jigs are also used for smaller lots that would be impractical to run on the range system.

Finishing Has Been Streamlined

Most of the work-clothing fabrics are given a simple starch and oil finish. Until recently, finish was applied in a pad and the goods were trucked to the can-tenter drying ranges. This operation is now handled in one step with a pad-can-tenter range. The cans are Teflon-coated to reduce the tendency of the finishing solutions to build up on their surfaces.

The latest approach to increasing the efficiency of the finishing operation is to apply the finish in the form of a spray, and Lanett has an experimental model of the necessary equipment now going through the shakedown stage. The potential savings that are possible with the spray method of finish application are very considerable because the moisture content of the fabrics can be kept to 30 to 35% as contrasted with 65 to 70% when the finish is applied in conventional pads.

Wash-and-wear has not yet made significant inroads in the work-clothing field, but Lanett applies resins to some lines of sport fabrics and does considerable waterproofing of canvas and ducks that go into hunting jackets and other outerwear.

Practically all work-clothing fabrics are put through a compressive-shrinkage operation so that residual shrinkage will be 1% or less.

Why Color Matchers Differ

• Here are some answers to why one color matcher may see a shade redder or greener than another equally experienced individual

RECENT EXPERIMENTS conducted by the National Bureau of Standards give clues as to why experienced color matchers see the same shade differently.

The purpose of the tests was to define the color response of the average human eye. The physical properties of color standards can be measured by strictly physical methods; however, to compute a valid numerical specification of an observed color, the eye's response to that color must be determined.

Tests were made by means of plaques colored gray by two methods. A simplex gray was produced by mixing black and white pigments. A complex gray was made by mixing yellow, green, purple, and white pigments.

When a person of normal vision views these plaques so that the samples subtend an angle of 10° in daylight, the simplex gray appears redder than the complex gray. However, at a distance from which the samples subtend an angle of 2°, the simplex gray appears greener than the other.

Why Distance Affects Hue

This phenomenon occurs because the retinal image of the samples at the 10° position covers both the macula and a large portion of the retina, while at the 2° position the retinal image falls wholly within the eye's macula, which is yellow. The effect is similar to placing a yellow filter in front of the eye for the 10° position.

Consequently, the 10°-field results depend primarily on lens pigmentation, and the 2°-field results depend not only on the lens but to a large extent on macular pigmentation.

In the bureau's experiment, each observer viewed the two samples side by side at the 10° position. The color temperature of the light was then reduced until neither sample appeared redder or greener than the other. This point was called the crossover point. The test was repeated at the 2° position, and the reciprocal color temperature for each position was plotted against the age of the observer.

Young observers, considered to have the least lens pigmentation, described the simplex gray as redder than the complex gray at both the 10° and 2° positions. A somewhat older group said the simplex gray appeared redder at the 10° position but matched at the 2° position.

A third group, which included most of the observers, rated the simplex gray redder at the 10° position and greener at the 2° position than the complex gray.

Group four, with still more lens pigmentation, said that the simplex matched the complex at the 10° angle but that it was greener than the complex at the 2° position. The oldest observers saw the simplex gray as greener at both positions.

The reciprocal color temperature of the source required to produce a red-green balance between the grays was found to vary widely from one observer of normal color vision to another. However, the crossover value of reciprocal color temperature for any one observer serves to characterize his color vision in an approximate but useful way.

The value (of reciprocal color temperature) required in a 10° field for red-green balance is tentatively taken as a measure of the yellow pigmentation in the lens of the observer's eye. Similarly, the value required in a 2° field for red-green balance of grays is a measure of both lens and macular pigmentation. The difference in these two values (value for 2° field minus value for 10° field) is tentatively taken as a measure of the macular pigmentation of the observer.

These results confirmed the belief that lens pigmentation increases with age and established the fact that macular pigmentation is little affected by the age of the observer. So broadly, when color matches disagree on a match, the angle of view and the differences in age must be considered as important factors that affect the individual's judgment.

From a report released by U.S. Dept. of Commerce, National Bureau of Standards

DOW | **Chemicals**

make textile news and profits

To report in detail all developments in all fields of chemistry that affect the textile industry would require a good sized press, running day and night. Here you find highlighted a few developments, new and old, about seven chemicals that play a part in the quality or production costs of textiles. Other facts and other chemicals will be covered in subsequent advertisements in this series. To keep in the know, keep tab on both pages of this and following ads.

You may wish to check certain items in this advertisement and forward to those concerned in your company.

ROUTE TO:

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PLAQUEMINE . . . 5+9= BETTER CAUSTIC SODA SERVICE

Completed only last October, the plant at Plaquemine, Louisiana, is already giving textile men (who realize the importance of assured source of supply) reason to double-check their present sources.

Using ultra-modern equipment and methods, this multimillion dollar installation brings to five the number of caustic soda production plants operated by The Dow Chemical Company. With the nine Dow shipping terminals, it brings to fourteen the number of points from which top quality caustic is available for immediate delivery.

The advantages to textile men are many, both now and in the future.

In the last two years, quiet plantation land along the Mississippi River, thirty miles north of New Orleans, has been changed to a teeming spic-and-span industrial center where caustic soda and other vital chemicals are produced with modern efficiency and precision.

Dow cordially invites members of the textile industry to pay a call at Plaquemine and personally view this new source for many important textile chemicals. The effective use of natural resources appeals to the efficiency-minded: natural gas, piped from nearby fields, furnishes fuel for power and heat; water for cooling and processing is readily available from the Mississippi as it flows by the door. It is something worth witnessing: every requirement for efficient production of the finest caustic soda is concentrated here in one plant.

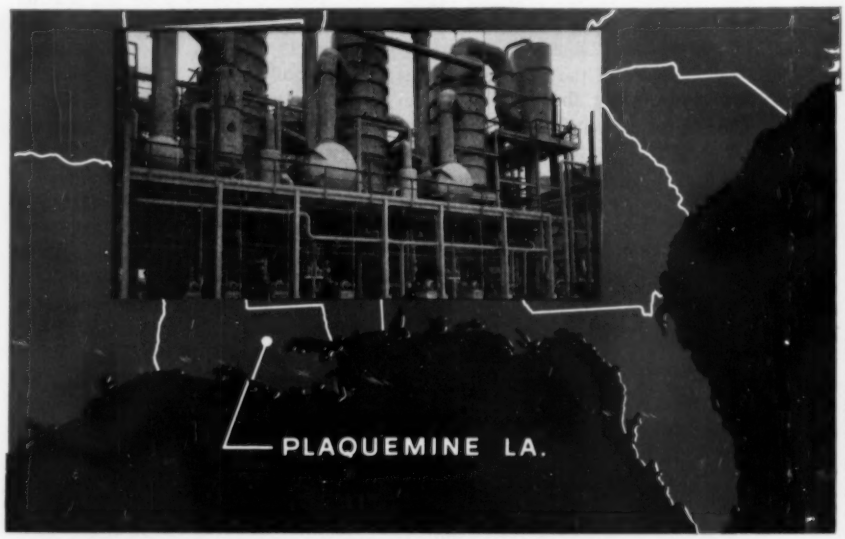
Textile management: the long view. A poll of men in textile mills, both large and small, will make these things clear:

- A dependable shipping source for caustic soda is important for efficient inventory control and economical manufacture.
- A dependable manufacturing source for top quality caustic soda is essential for long range planning. Regardless of what may develop nationally or internationally, a *sure* supply is necessary.

With five production plants—located in Michigan, Texas, California, Ontario and now Louisiana—Dow provides the best possible answer to the question of assured supply. And Dow's nine shipping terminals—each completely stocked and staffed for fast delivery—furnish a time-tested solution to the problem of dependable delivery.

In planning ahead, the textile executive finds there is another important consideration: Dow is widely accepted as the reliable source of supply for caustic soda in every form—50% and 73% solution, standard flake, solid and ground forms.

New basic guide for NaOH buyers. The comprehensive Dow Caustic Soda Handbook discusses properties of



The new Dow plant in Plaquemine, La., produces quality caustic soda, used by textile mills for kiering, for bleaching and mercerizing, for changing the "hand" or feel and producing a sheer finish.

NaOH, its uses, forms, shipping and handling data, and methods of analysis. Everyone in the textile industry connected with the use of this basic chemical should have a copy. Ask your Dow sales representative for your copy, or write Dow.

● Boon to cotton fabricators

Even whites resist wrinkles with EDA 98%

The latest improvement in ethylenediamine resins enables mills to fabricate cottons in pastel colors, even white, so they are not only wrinkle-resistant, but have excellent wrinkle recovery properties. Higher color retention in the finished fabrics, along with improved dimensional and storage stability, may also be obtained using EDA-derivatives.

The product that makes this possible is EDA 98%, pioneered by The Dow Chemical Company. Its quality and purity surpass anything previously achieved, making it the ideal base for ethylenediamine resins used in treating finished cotton. So pure, you can look through a bottle of EDA 98% almost as easily as through a plate glass window. This purity pays off with any cotton fabric but especially light colored or white fabric where true, pure tones are required for the important high style market which includes dress shirts, blouses, summer dresses and skirts.

The greatly improved resins from high quality EDA, the result of years of extensive research in the Dow laboratories, are attracting the attention of foremost cotton fabricators both in this country and abroad.

Dowicide preservatives help prevent damage in goods subject to mildew and rot.

● Dowicide G . . .

Textiles get an assist from chemistry

The preservation of starch solutions used by textile mills for warp sizing took a long step forward with the discovery of Dowicide® G, one of a family of industrial preservatives developed for the control of bacteria and fungi. Dowicide G (technical sodium pentachlorophenate) added to starch sizing prevents breakdown in vats and stops mildew damage in gray goods. By eliminating mildew, this modern preservative marks up a double savings. It saves fabricating time. And it saves the extra costs created by increased bleaching that's caused by mildew damage. Dowicide preservatives also effect important savings by preventing mildew and rot in carpet yarns; resisting rot in rope and bale twine and coated burlap; as well as preservation of cotton, rayon and silk yarn. Dow has experience-in-depth with each of these applications—you are invited to write for detailed information on your particular problem.

★ ★ ★ ★

LEARN MORE ABOUT CHEMICALS that are advancing textile production, reducing production costs. Dow is an authoritative source for information about textile chemicals as well as a reliable source for the chemicals themselves. Write THE DOW CHEMICAL COMPANY, Midland, Mich., Chemicals Sales Dept. 981FE8.

NEWSWORTHY NOTES

on other chemicals of interest to the textile industry

DOWANOL. Latest information about the most complete line of glycol ether solvents for dyeing is in a free folder and booklet on Dowanol® products.

GLYCOLS. Mono-, di- and triethylene glycol are three industrial glycols proved outstanding as fiber lubricants and as snagging or drying preventatives.

CHELATING AGENTS. Textile men use Dow triethanolamine to reduce iron staining; Versene®, Versenol® and Versenex* for other cost-cutting applications.

*TRADEMARK

DOW LATEX. In many applications, from carpet backing to hair-pad binding, Dow Latexes are cutting costs and providing improved product features.

DOW CHEMICALS BASIC TO THE TEXTILE INDUSTRY

Chemical Raw Materials
Bleaching Chemicals
Preservatives • Plasticizers
Glycols and Derivatives
Methylcellulose • Emulsifiers
Solvents • Aromatics
Caustic Soda
Muriatic Acid • Latexes
Chlorine • Soda Ash

THE DOW CHEMICAL COMPANY
Midland, Michigan

DOW

Why this dress
does what it does
for
Miss America
Miss Mary Ann Mobley—Miss America 1959—wears an *Everglaze wash-and-wear cotton treated with RHONITE R-1 resin.
It's just the thing for this very pretty young lady to take on her grand tour of the U.S., because it will keep its crisp newness through many a washing. Just the touch of an iron—if it ever needs ironing at all—is the only special care it will ever require.
That's because "Everglaze" fashion fabrics—developed by Joseph Bancroft & Sons Co., Wilmington, Delaware—have the wrinkle-protection of RHONITE R-1. This modified urea formaldehyde resin penetrates and reacts inside the fibers. In cottons, rayons, and blends, it provides long lasting crush resistance and dimensional stability.
Write today for a description of processing easy-care fabrics with RHONITE R-1. What RHONITE R-1 does for Miss America's dress, it can do for *your* fabrics. Why settle for less?
*Everglaze is a trademark signifying fabric processed and tested according to processes and standards controlled and prescribed by Joseph Bancroft & Sons Co.
Chemicals for Industry
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RHONITE R-1

How To Choose A Pigment-Printing System

Pigment-printing systems can be divided roughly into two types: water-in-oil and oil-in-water. Here is how an experienced printer uses each system to—

- **Keep contamination to a minimum**
- **Get best color effects**
- **Hold costs down**

By MALCOLM MACKAY

BY TAKING ADVANTAGE OF THE GOOD POINTS of both common pigment-printing systems, you can often turn out a better job than you can by either one alone.

Printers are probably more familiar with the oil-in-water system because it has been around a lot longer than the water-in-oil method of applying pigments. Also, there has been more time for manufacturers to work out the bugs in the oil-in-water system; and for these and other reasons, it is more widely used.

The pigments that are used in printing by either system are essentially the same. Each system has it good points, and each can be used to advantage over the other in some applications.

Consider Costs and Effects

When a choice between methods has to be made, the printer looks to costs first but often must consider quality factors too. The depth of shade in question may affect his choice of printing methods.

Take the water-in-oil method as an example of what the printer must consider in setting up. This method gives sharp prints, and crocking in dark shades is generally less than when the oil-in-water phase is used. But extenders or clears for water-in-oil systems are more expensive, often two to three times as costly as those used in the oil-in-water emulsion.

So when it is possible, on light or medium shades, the printer will choose an oil-in-water system. There is also a kickback from the sharper prints that can be obtained with water-in-oil methods. Although the colors are brighter and details clearer, this method sometimes gives poor coverage in light shades because the color is more on the surface of the goods than is the case with oil-phase colors. Washfastness is sometimes poorer with water-phase prints because the color is not as well attached to the fiber as it is with oil-phase systems.

How To Juggle Types

The two systems may be alternated in the printing machine so as to get the best results from each. For instance, when a printer sets up an oil-phase gold on his No. 1 roller, he might follow with a water-phase blue on his No. 2 roller. Water and oil have little affinity for each other; so the oil-phase gold will not contaminate the water-phase blue nearly as much as if the blue were in the oil-phase.

It is also best to run an oil-phase pigment into a Rapidogen water-phase color, or vice versa, to keep down contamination. A Rapidogen-type color in a water-phase paste will quite often tail down into a water-phase pigment color.

When a Rapidogen-type color in a water-phase mixture falls on a pigment color, a better mark is obtained if the pigment is also in a water-phase state. This effect is particularly noticeable when the pigment color is going on ahead of the Rapidogen.

Reducing agents such as hydro or sodium sulfoxalate formaldehyde are often added to pigment colors to prevent contamination from Rapidogen-type colors. Where this step is necessary, it is better to mix the pigments in oil-phase because these emulsions are more stable to hydro than the water-phase types.

Cleanup Is Simpler

Water-phase colors are easier to clean up after printing than the oil-phase type. The water present is in the continuous phase and so responds to water washing much more readily. Pans, furnisher rolls, blankets, rollers, and any other equipment can be rinsed clean without the need for solvents or emulsifiers.

Water-phase colors may give trouble on napped flannels because they tend to paste down or mat the nap. This situation usually occurs when the roller that is running the water-phase color is ahead of one or more print rollers in the same pattern.

The theory is that the emulsion of the water-phase color breaks on contact with the cloth; and the resins, low-crock agent, and methylcellulose are drawn into the fiber because they are in the water phase. The inner oil phase is less attractive to the fabric.

Succeeding rollers press the nap down into the body of the fabric, and the end result is that it is almost impossible to raise the nap again so that the goods will look right.

A good full nap is less affected in this way than a light nap because the full nap retards water absorption to some extent. The type of napping assistant that is used can also affect this matting condition. If the water-phase emulsion is tightened up, matting can sometimes be helped considerably.

Some of the water-phase clears have a tendency to foam. Foaming can be helped considerably by adding small amounts of antifoam materials. Some manufacturers of water-phase clears have overcome this problem in their product. Foaming is very seldom any problem with oil-phase colors.

BRISTOL'S INSTRUMENTATION

★ *News and information about automatic controlling,*

Advanced developments from Bristol

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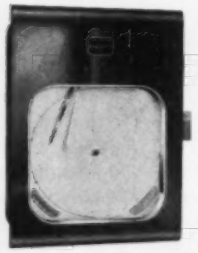

New ideas at Bristol are revolutionizing some of the older concepts of pneumatic control instrumentation. These giant strides are making obsolete many designs that are only a few years old—but are already outmoded by modern Bristol equipment that gives better control of process variables and sets new standards for dependability.

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Basic simplicity, accurate design, closely held manufacturing tolerances make one single adjustment all that's necessary on the Bristol 500—even after complete disassembly and reassembly with replacement parts.

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Famous Bristol measuring elements

The heart of an instrument, whether it be for recording, controlling, or telemetering, is its sensing and measuring system. That's why, for the 70 years of its existence, the Bristol Company has thrown its resources into the development of measuring systems.

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Bristol instruments come with the widest selection of high-quality measuring elements available for any line of instruments. **Temperature, pressure, vacuum, draft, absolute pressure, liquid level, flow, humidity, density, pH, are just a few of the variables that can be measured—plus a large number of other variables measurable with air-controlling electronic potentiometers and bridges.**

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These problems:	These operating modes:
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2. Selective control	2. Proportional—to 100% and to 30%
3. Ratio control	3. Reset with wide band—to 400%
4. Time program control	4. Derivative (rate)
5. Pneumatic transmission	5. Reset plus derivative

Bristol pneumatic control assures uniform ceramic tiles

Uniform size, color, texture and strength of ceramic tiles depend, among other things, on exact control of firing temperature. That's why Orange County Ceramic Tile Manufacturing Company, Huntington Beach, Cal., makers of the brilliant SUNSET tile line for home and industry, use Bristol Dynamaster* Electronic Pyrometers for accurate automatic control of kiln temperature. Precision automatic control insures an exceptionally uniform product and frees skilled production line supervisors from the need of constant checking.

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Bristol Dynamaster* potentiometer and bridge instruments are the most widely versatile electronic instruments on the market today. Models are available not only for precision pyrometry with thermocouples, radiation pyrometers or resistance thermometers, but for measurement, recording and electrical or air control of pH, speed, voltage, current, power, resistance, strain-gauge output and many other variables. An extremely wide variety of attachments and accessories is available—including auxiliary transmitting devices, digital encoders, alarm contacts, etc. Round or Strip charts (see photos below). Most models available for standard 19" relay rack-mounting.

NEWS AND NOTES

recording and telemetering instruments from Bristol ✱

INSTRUMENTS HELP EXTRACT STRATEGIC MANGANESE

These Bristol Series 500 recorders and recorder-controllers are keeping tabs on the exclusive manganese extraction process used by Manganese Chemical Company, Riverton, Minnesota, one of the few domestic producers of chemical manganese compounds. The Bristol air-control instruments monitor reducing gases, cooling gases, indicate leach liquor liquid levels and record vital temperatures in the production process. The plant is in operation 24 hours a day, 7 days a week and the Bristol 500's stand up to this grueling service with the same outstandingly high reliability that they are showing in hundreds of other chemical plants throughout the world.

500's CONTROL OIL TEMPERATURE FOR STEEL ROLLING

These Bristol Series 500 instruments are two of a number used to control the temperature of lubricating oil supplied to the rolling mill main bearings on the number one rod mill at the Cuyahoga Works of U. S. Steel's American Steel & Wire Division.

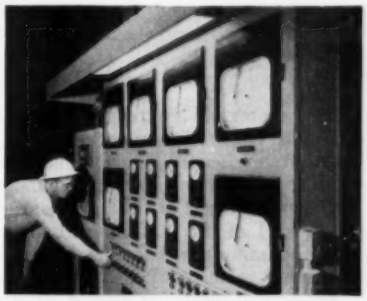
The instruments maintain temperature of the lubricants at 100°F for the entire system by controlling the amount of cooling water being used.

Bristol Series 500 instruments are noted for their excellent maintenance record under severe environmental conditions, can be maintained without special skills, special tools. What's more, Bristol service engineers, operating out of the main plant, four branch plants, and from 44 principal

cities, are available to help you apply series 500's (or any Bristol instruments) and assure you of their long, continuous, trouble-free service.

3 big reasons for air-control in this plant

Sometimes it's a toss up between air or electronic control. Not so in Lithium Corporation of America's Bessemer City, North Carolina, plant for extraction of lithium from low-grade ore. Three cogent reasons suggested air control for a large part of this operation: (1) positive pressure of 15 to 20 psi would protect the system from humidity, dust and corrosive fumes, (2) short transmission lines (none longer than 1100 ft., most only 200 to 300 ft.) would insure positive, lag-free operation and (3) cost of an air-control system for their $7-million plant was estimated at only $150,000 to $200,000.



Have any doubts about what control system you should use? Get Bristol's absolutely unbiased recommendation: As makers of *all types* of electronic and pneumatic process control instruments, Bristol is in a unique position to help you get the instrumentation that's exactly right for your needs.

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BRISTOL TRAIL-BLAZERS IN PROCESS AUTOMATION

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

A TEXTILE WORLD Refresher

Preparation and Bleaching—

5. How Preparation Methods Developed

- The alkaline scour
- The functions of caustic soda and assistants
- What produces good absorbency and whiteness

By PROF. KENNETH S. CAMPBELL, Dept. of Textile Chemistry
N. C. State College School of Textiles

IMMEDIATELY FOLLOWING THE DESIZING OPERATION in the preparation of cotton goods, there normally comes an alkaline scour. Desizing and scouring probably remove all of the pectins and proteins, about 70% of the ash, and the greatest part of the motes and pigment.

Part 1 of this Refresher discussed the chemical nature of the impurities that must be removed from cotton. This removal is necessary to provide a satisfactory bottom for subsequent bleaching, dyeing, printing, and finishing. The cotton fibers must be made as accessible as possible to the agents used in the wet processes that follow if good quality material is to be turned out efficiently.

The effectiveness of the scouring process may be determined by the quality (for example, whiteness and permanence of the whiteness) of the bleached goods that are finally obtained, the uniformity of dyed goods, or the degree of absorbency in such goods as toweling or medical gauze. The progress or efficiency of scouring is usually measured directly on the scoured material by determining such properties as residual wax, ash, and cellulose content.

How Scouring Has Developed

The scouring or boiling off of cotton has undergone very considerable change in the last 125 years. At one time, a lime boil in an open kier followed by a soda boil was employed. Later an intermediate acid sour was used between the lime and soda ash treatments. The purpose of these three steps was (1) to saponify the waxes, forming lime soaps; (2) to decompose the insoluble lime soaps, forming free fatty acids; and (3) to convert the fatty acids into soluble soaps.

About 75 years ago the practice of boiling with caustic soda in a kier under pressure was introduced; in this way temperatures up to 300° F. could be obtained, although temperatures around 240° F. are more common. The effectiveness of this operation made unnecessary the lengthy combination treatments previously employed.

However, for a long time many bleachers claimed that a satisfactory bottom could be obtained only with the older double-kiering treatment. An acid sour prior to kiering is still frequently used because of its beneficial effect upon the efficiency of wax removal in scouring.

Continuous Methods Take Over

In the last 25 years, continuous systems of scouring and bleaching have become more and more prevalent and now account for a majority of all cloth bleached. Probably any new installation that expects to turn out anything over 200,000 yds. of cloth per week would be based on continuous equipment.

Thus the technology of cloth preparation has seen considerable change in recent times and is still in a decidedly fluid state. A continuous one-step combination scour-bleach was introduced several years ago; and as more information is obtained concerning its operation, it may become very widely used.

THE PRINCIPAL ALKALIS USED

Caustic Soda

Sodium hydroxide, or caustic soda, is the principal component of scouring solutions for cotton. This material is used in quantity in a number of textile wet-processing operations, and the approximately 450-million lbs. used annually in the industry is equaled only by common salt.

Historically, both lime and soda ash have been used as scouring alkalis, but it has been established that neither of these products is as effective as caustic soda in remov-

ing the important impurities from cotton.

Where there is reason for a milder scour at a lower pH, as when the fabric contains colored yarns, soda ash is used in place of sodium hydroxide.

Occasionally, when the ultimate in uniformity of the cloth is required or where the nature of the fabric or the equipment used leaves some question as to the uniformity of treatment, the goods will be given one kiering, taken out, washed, and returned to a kier, thus more or less reversing its original position. In this circumstance, some bleacheries employ soda ash as the alkali in the second kier boil.

Even when soda ash is used for scouring fabrics with colored yarns, there is always the possibility that the reducing action of the hot alkaline kier liquor on vat dyes may bring about a reversion of the dye to the leuco state with consequent bleeding and marking off on adjacent white areas of the cloth. To prevent this trouble, mild oxidizing agents such as sodium m-nitrobenzene sulfonate (for example, Sitol or Ludigol) may be added to the kier liquor.

Phosphates and Silicates Help

Two other alkalis that are more or less frequently employed are sodium silicate and tetrasodium pyrophosphate. Their function is supposed to be as sequestering agents for calcium and magnesium ions, as emulsifying agents for oily matter, and as dispersing agents to prevent redeposition of removed pigment matter. There are doubts whether such effects are realizable with these agents in the presence of such an excess of caustic.

However, experiments have been described in which replacing one-third of the caustic in the boil-off with sodium metasilicate improved whiteness after scouring from 71 to 79 (compared to magnesium oxide as 100), and from 81.5 to 84 after bleaching. The presence of silicates in kier liquor is also claimed to improve mote removal and to reduce the residual noncellulosic material present after scouring. In any event, these two materials are commonly found in kier-boiling formulas.

Organic sequestering agents of the ethylenediamine tetra-acetic acid type are ineffective in caustic solution. A sodium salt of a polyamino-polycarboxylic acid (for example, Versene T) is a powerful chelating agent for iron in strong caustic solutions and is of definite value in producing improved whites in scouring.

Another group of scouring assistants often used are those intended to promote emulsification of the cotton wax and other impurities. Such assistants must have high detergent and dispersing power under kiering conditions. Rosin soap was one of the first such products to be used, but it lacks stability to hard water and its use is not now important.

Other soaps such as sulfated castor oil, tallow, and coconut oil have been used but of course suffer from the same deficiency as rosin soap. Pine oil is a popular kier additive, usually in combination with one of the soaps mentioned.

Synthetic detergents that will withstand hot strong caustic are available. The most used are of the sulfated fatty alcohol, fatty acid amide, and polyethylene oxide types. They present no stability problem with hard water, promote rapid initial wetting of the goods, and increase efficiency of rinsing after scouring.

The bleacher must decide whether the particular conditions he has to contend with warrant the added expense of one or more of the scouring auxiliaries mentioned.

Factors That Affect Results

By using residual wax content, absorbency, weight loss, or cellulose content as criteria and by systematically changing the variables involved in the scour, some information can be gained as to the relative importance of the various factors and more or less optimum scouring conditions can be established.

In this way it has been found, for example, that the bulk of the impurities are removed at 212° F. using a 1% solution of NaOH. Weight loss in scouring (normally 6 to 9%) was found to increase only slightly when higher temperatures, up to 295° F., and higher concentrations of caustic, up to 3%, were employed.

Of more significance perhaps is the progressive increase in wax removal noted when higher temperatures are used. However, there is some evidence that at 295° F. a 3% solution of NaOH removes less wax than a 1% solution. As has been indicated, both lime and sodium carbonate cause less weight loss than sodium hydroxide.

Although lower wax content generally goes hand in hand with increased absorbency, there is apparently no correlation between the amount of wax and absorbency; distribution of the wax may very well play a more important part.

It is apparently possible to remove too much of the wax. If the wax content is reduced to 0.1% or less, the cotton will feel too crisp or harsh. Somewhere between 0.25% and 0.35%, residual wax should provide both acceptable hand and satisfactory absorbency.

CONTINUOUS-BLEACHING METHODS

How To Get Absorbency

The basic feature of continuous scouring is the storage of caustic-saturated cloth in a steam atmosphere in a J-box. In an investigation designed to find the relation between steaming time and absorbency, D. J. Campbell determined that with 2% caustic based on the weight of the fiber, a 2-hr. steaming was necessary to produce absorbency, whereas with 7% caustic, 15 mins. was sufficient.

The cloth was considered absorbent if a drop of water placed on its surface was completely soaked up in 3 secs.; otherwise it was termed nonabsorbent. Some data obtained in this way are shown in Fig. 1, page 77. All experiments were carried out with 80-square print cloth.

Note that the amount of caustic based on cloth weight required for satisfactory bleaching results in a 1-hr. steaming time (normal in commercial practice) is approximately the same (about 3%) as is required for a kier boil that takes 8 to 12 times as long. The time difference is probably due to the difficulty in achieving uniform action over the large mass of goods in the kier.

Further work on continuous-bleaching methods by D. J. Campbell shows that there is a minimum time factor necessary for the caustic-steaming period to produce first absorbency and finally a mote-free fabric when the goods are subsequently bleached in a 0.5-vol. peroxide bath.

These points are evident in Fig. 2. All samples were treated with a 3% caustic solution and bleached for 1 hr. in peroxide of various strengths.

How Time Affects Bottoming

Samples falling above and to the right of the broken line (Fig. 2) are absorbent and free of motes respectively. These data show in part that with the particular fabric used the whiteness obtained in a given peroxide concentration reaches a maximum when the previous caustic steaming has been carried out for about 30 mins. (A)

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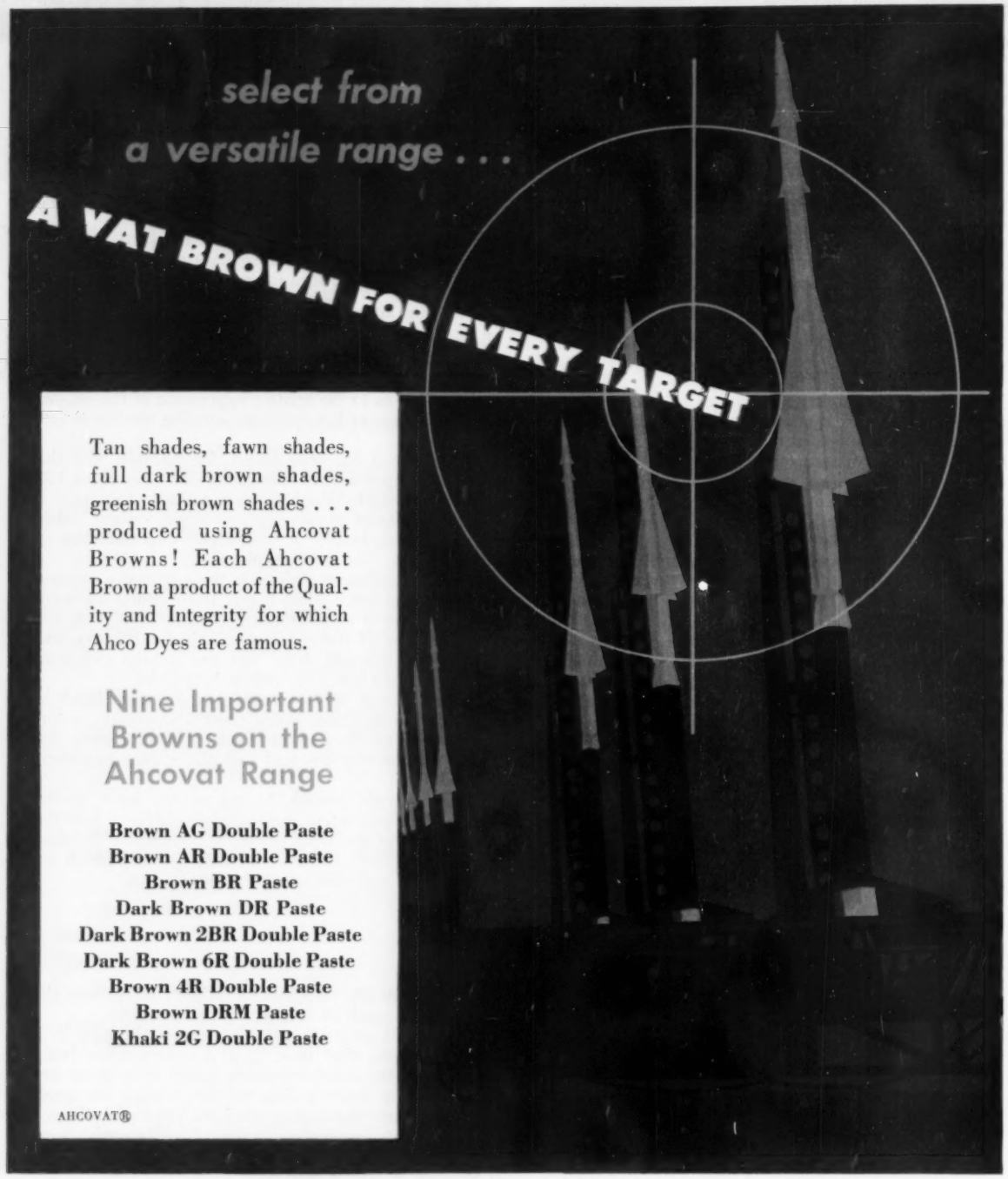

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and that an absorbent fabric is obtained, even when bleaching is done with very dilute peroxide, after a 10-min. caustic-steaming time (B).

Mote removal is obviously more difficult to obtain than absorbency, requiring over 40 mins. caustic steaming to produce mote-free fabric in a subsequent peroxide bath of 0.5-volume strength (C).

As indicated by Fig. 2, bleaching by itself will not produce absorbency. But where 45 mins. caustic steaming alone was required to obtain absorbency, as shown in Fig. 1, if bleaching is preceded by only 5 mins. steaming in caustic, the 0.5-vol. peroxide treatment produces absorbent fabric.

So absorbency without much whiteness can be obtained by following up a short caustic treatment with a very mild bleaching operation. Conversely, satisfactory whiteness can be obtained without absorbency if a bleach of normal strength is preceded by a very short caustic steaming.

How Caustic Is Consumed

One investigator has calculated that the major portion of the NaOH in scouring liquor (for example, three grams NaOH per 100 grams cotton) may well be used up by the pure cellulose and the other constituents of raw cotton.

This utilization of NaOH no doubt accounts for the empirically established value of 3% for the concentration of caustic found satisfactory in both batch and continuous scouring processes. If lesser quantities are used, there may not be enough present to react with the difficultly saponifiable waxes that must be removed or, if once solubilized, they may be precipitated from solution as more of the alkali is absorbed by cellulose and its associated substances.

It is fortunate for the bleacher that the alkali treatment that so satisfactorily removes the natural impurities from cotton has under ordinary circumstances very little harmful effect on the properties of cellulose. It is important, however, to be sure that cotton is not exposed to atmospheric oxygen while in the presence of hot sodium hydroxide or oxycellulose may be formed in local areas. Oxycellulose has low strength and modified dyeing properties. This situation is a particularly important point to guard against in kier boiling.

In modern continuous-scouring systems, the storage of the caustic-impregnated cloth takes place in an atmosphere of saturated air-free steam and when it is removed from the J-box it is immediately washed.

The investigation of cotton bleaching processes and their effect on fabric conducted by Kettering and Kramer showed that a strength reduction of between 5 and 20% occurred due to wet processing up to and including scouring. Many factors influence breaking strength, and these values may be misleading.

Fluidity Is a Test of Damage

Of more importance are cuprammonium fluidity values that are more sensitive indices of damage; for eight different commercial scouring processes, including three continuous methods, the rise in fluidity averaged only 0.6 rhes and did not exceed a value of 1.0 rhe. These slight changes indicate negligible damage in scouring.

There is evidence that caustic scouring more or less completely destroys the primary or outer wall of the cotton fiber. It is this outer layer that contains by far the largest proportion of the impurities that scouring removes.

The familiar ballooning of raw cotton fibers in cuprammonium does not take place with boiled-off cotton fibers because the restricting influence of the primary wall is no longer present to any great extent. Some workers have expressed the belief that the properties of the fabric would benefit if scouring could be accomplished without materially harming the primary wall, although how this might be done has not been answered.

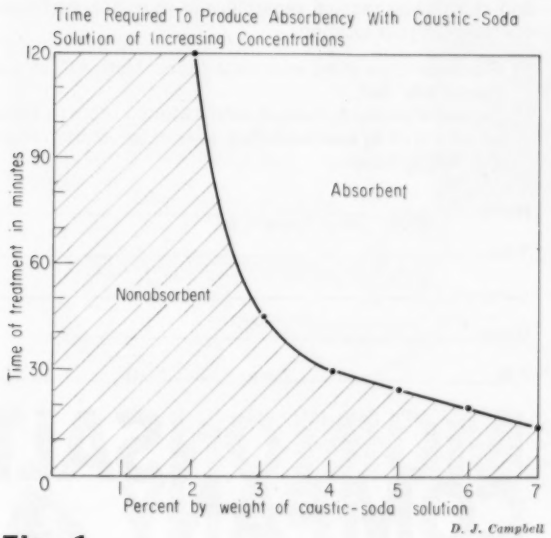

Fig. 1

THIS GRAPH shows that both time and concentration are factors in producing absorbency in cotton fabrics by treatment with caustic soda.

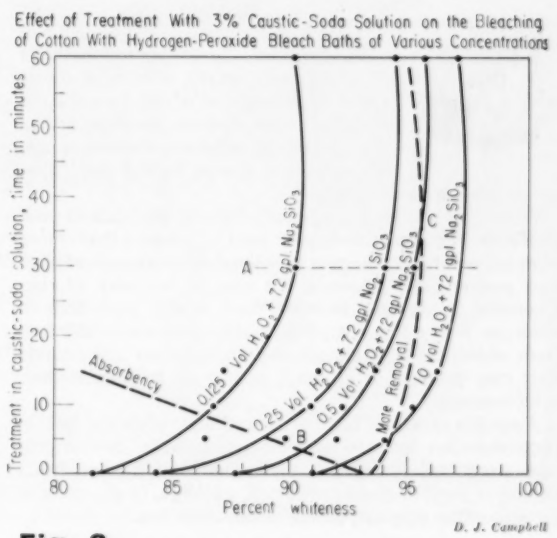

Fig. 2

IF CAUSTIC-SATURATED GOODS are steamed only a short while, absorbency is good after a mild bleach. Mote removal takes much more time or a stronger bleach bath.

Colors are truer, re-runs fewer with Morton Chemical grade '999' salt

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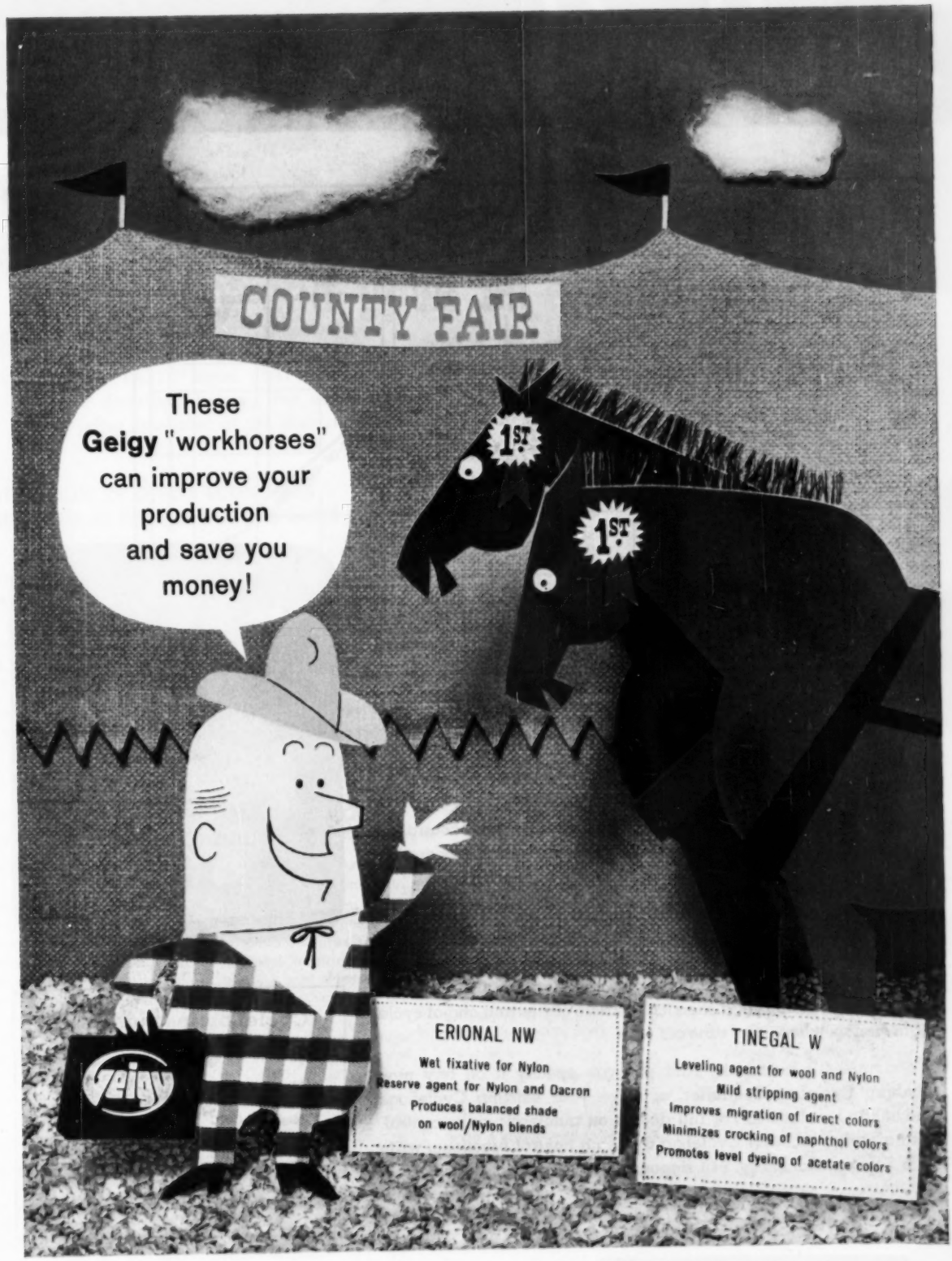
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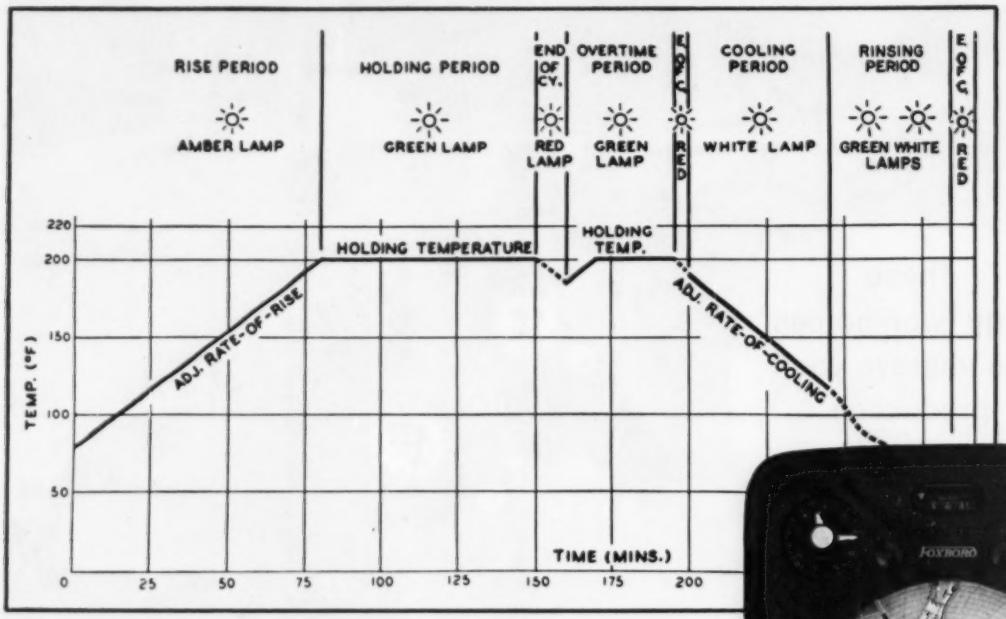

new CycleLog* feature adds automatic rinse to Dye Bath control

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news from Du Pont

3 new dyes added to "LATYL"* line offering economy and good all-around fastness

Widening the range of Du Pont disperse dyes for "DACRON"* and other polyester fibers are these three "LATYL" dyes: "LATYL" Blue 2R, "LATYL" Yellow RC and "LATYL" Blue LS. Their advantages are described below. For detailed information and application suggestions, consult a Du Pont Dyeing Specialist at the district office nearest you.

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"LATYL" Blue 2R can be applied to "DACRON" by aqueous carrier methods, by aqueous high temperature dyeing processes, and also by the Thermosol process. It exhibits good level dyeing characteristics and has good fastness to sublimation. In blends containing "DACRON" and wool, it stains wool similar to "LATYL" Blue 4R.

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Washing (A.A.T.C.C. #3A)	Negligible or slight change
Perspiration	Negligible or slight stain

NEW "LATYL" YELLOW RC FEATURES GOOD FASTNESS, OUTSTANDING BUILD-UP PROPERTIES

"LATYL" Yellow RC increases the range of disperse yellows for "DACRON" and other polyester fibers and is of particular interest for its economy. It has good lightfastness which is essentially unaffected by residual carrier in the fiber and has very good fastness to wet processing tests. It shows good fastness to sublimation. However, some staining of adjacent fibers does occur with the degree of stain depending on the severity of the test and the depth of shade.

"LATYL" Yellow RC has outstanding build-up properties, is stable to high temperatures and can also be applied by the Thermosol process. It stains wool considerably when used in dyeing blends of "DACRON" and wool, but the degree of staining is such that the dye can be used in these blends.

FASTNESS PROPERTIES
on Spun "DACRON" (carrier dyed)

LIGHT (Fade-Ometer)	RATING
0.25% Heat Treated 1 Min. at 380° F.	40-80 Hrs.
2.0% Heat Treated 1 Min. at 380° F.	80-160 Hrs.
Washing (A.A.T.C.C. #3)	Negligible or no change
Washing (A.A.T.C.C. #3A)	Negligible to slight change
Perspiration	Negligible or no stain

"LATYL" BLUE LS OFTEN ENDS NEED FOR COSTLY SHADING ELEMENTS

This third new Du Pont disperse dye offers a green, dull shade of blue with good all-around fastness. Lightfastness in particular is very good when dyeings are properly heat treated to remove residual carrier. "LATYL" Blue LS also exhibits outstanding fastness to sublimation.

"LATYL" Blue LS simplifies the production of brown, charcoals and navies, where it holds its fastness and eliminates need for the expensive shading elements often used to counteract red shade changes of base blue under incandescent light. "LATYL" Blue LS is best applied with a small amount of "ALKANOL"* HCS surface active agent to insure maximum leveling. It can be applied to polyester fibers by aqueous carrier method, aqueous high temperature dyeing processes and the Thermosol process.

FASTNESS PROPERTIES
on Spun "DACRON" (carrier dyed)

LIGHT (Fade-Ometer)	RATING
0.5% Heat Treated 1 Min. at 380° F.	80-160 Hrs.
2.0% Heat Treated 1 Min. at 380° F.	80 Hrs.
Washing (A.A.T.C.C. #3)	Negligible or no change
Washing (A.A.T.C.C. #3A)	Negligible or slight change
Perspiration	Negligible or no stain

news from Du Pont

VERSATILE DYEING ASSISTANTS INCREASE LEVELNESS AND PENETRATION

Better and more uniform shades in synthetic fabric dyeing can be achieved with "DUPONOL"* D Paste which wets fibers fast, maintains color dispersion. Only ½ to 1% "DUPONOL" D Paste is needed, based on weight of material to be dyed. "DUPONOL" D Paste also offers a good medium for finishing off vat colors in dyeing of cotton piece goods.

"AVITONE"* T is a multi-purpose product with softening, lubricating, rewetting and dispersing properties. "AVITONE" T has been found to be highly suitable as a dispersing agent in dyeing of polyester fibers and blends of such fibers with wool.

"ALKANOL"* HCS is a highly versatile surface active agent for use as a retardant and leveling agent in dyeing processes, as a detergent, and as a general utility emulsifying and dispersing agent. It is especially useful as a leveling agent in applying disperse dyes to polyester fibers and blends with wool; and in detergent or cleaning operations where oily and greasy soils are present. It is also used in applying cationic dyes to acrylic fibers.

"ALKANOL"* LN surface active agent is used in the Du Pont LN dyeing process which minimizes the barré problem when acid dyes are applied to nylon filament. In the process, "ALKANOL" LN is used to complex the anionic acid dye in the bath. At a pH of 3.0 to 3.5 the complex gradually dissociates to form the free anionic dye which is then absorbed by the fiber. "ALKANOL" LN does not occupy dye sites within the fiber; therefore, little reserving action occurs even in heavy shades when the recommended amount of "ALKANOL" LN is employed. Optimum results are obtained with "ALKANOL" LN at temperatures of 200° to 208° F. In addition to good barré coverage, "ALKANOL" LN gives fabrics a soft hand. It is simple to use, since it is a liquid product miscible with water in all proportions.

Our nearest district office will give specific recommendations for use of these dyeing assistants.

The Charlotte District Sales Office Laboratory, typical of those in each of our sales offices, is fully equipped with the latest machinery and apparatus for the application of dyes, dyeing assistants, finishing chemicals, etc. This makes it possible to duplicate or simulate conditions existing in actual practice. Personnel combine the necessary scientific training with wide practical experience.

NEW "PAD-FIX" METHOD DEVELOPED FOR DYEING "DACRON" POLYESTER TOW

A new method has been developed by Du Pont for obtaining level dyeing with "DACRON" polyester tow. The new method, designated Pad-Fix, consists of padding the tow with a dye dispersion, placing the tow in a dyeing machine, adding water, heating to an elevated dyeing temperature and continuing the dyeing in the usual manner. Previous to this development, dyeing was accomplished by pumping a dye dispersion through the tow, which often resulted in unlevelness because of filtration problems. In addition to improved levelness, the new method allows reduced dyeing time, improved quality and better uniformity from lot to lot.

Equipment required for the Pad-Fix Method consists of a small, inexpensive padder, a perforated basket and a stock or top dyeing machine into which the basket can be placed. For further details, contact the district office nearest you.

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E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Department, Dyes and Chemicals Division, Wilmington 98, Del.

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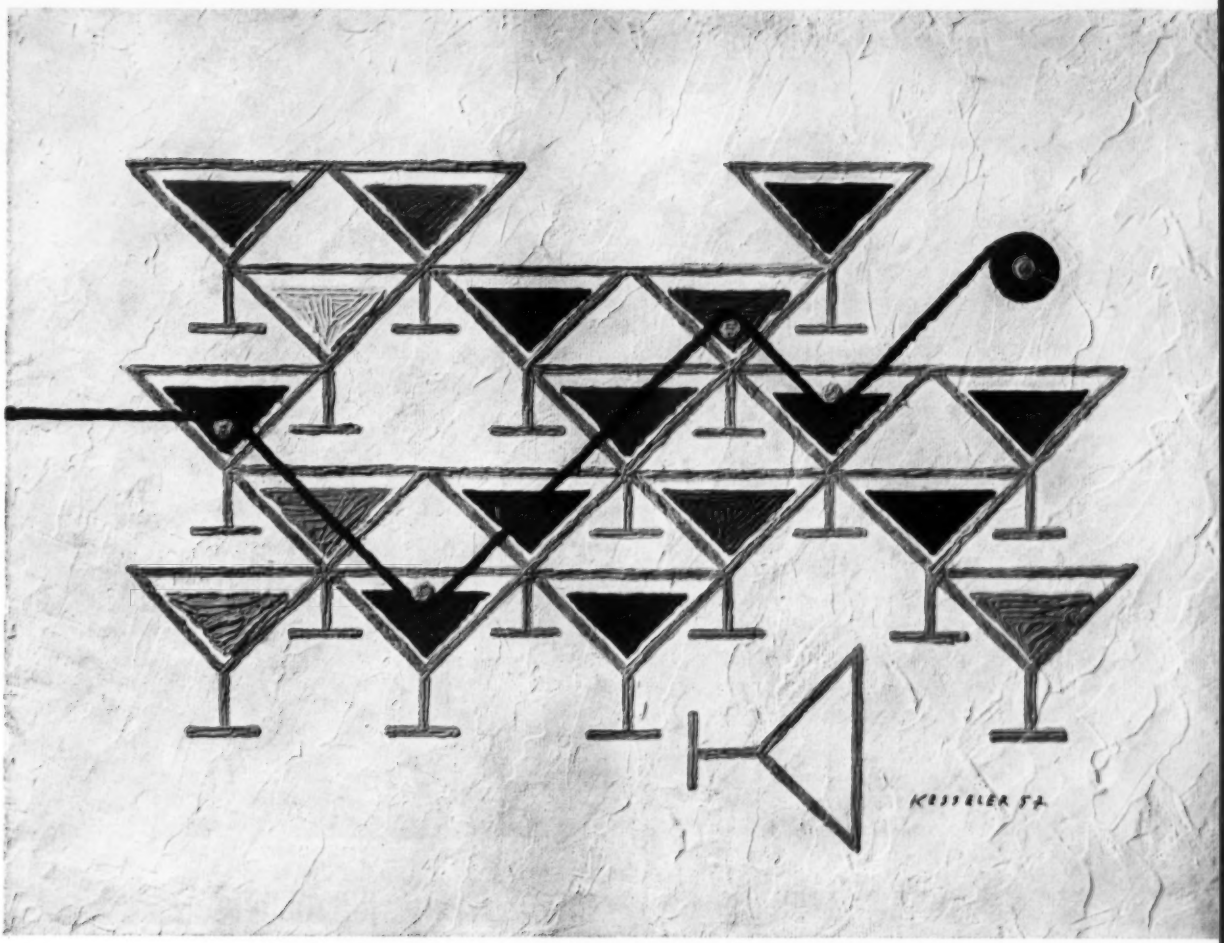

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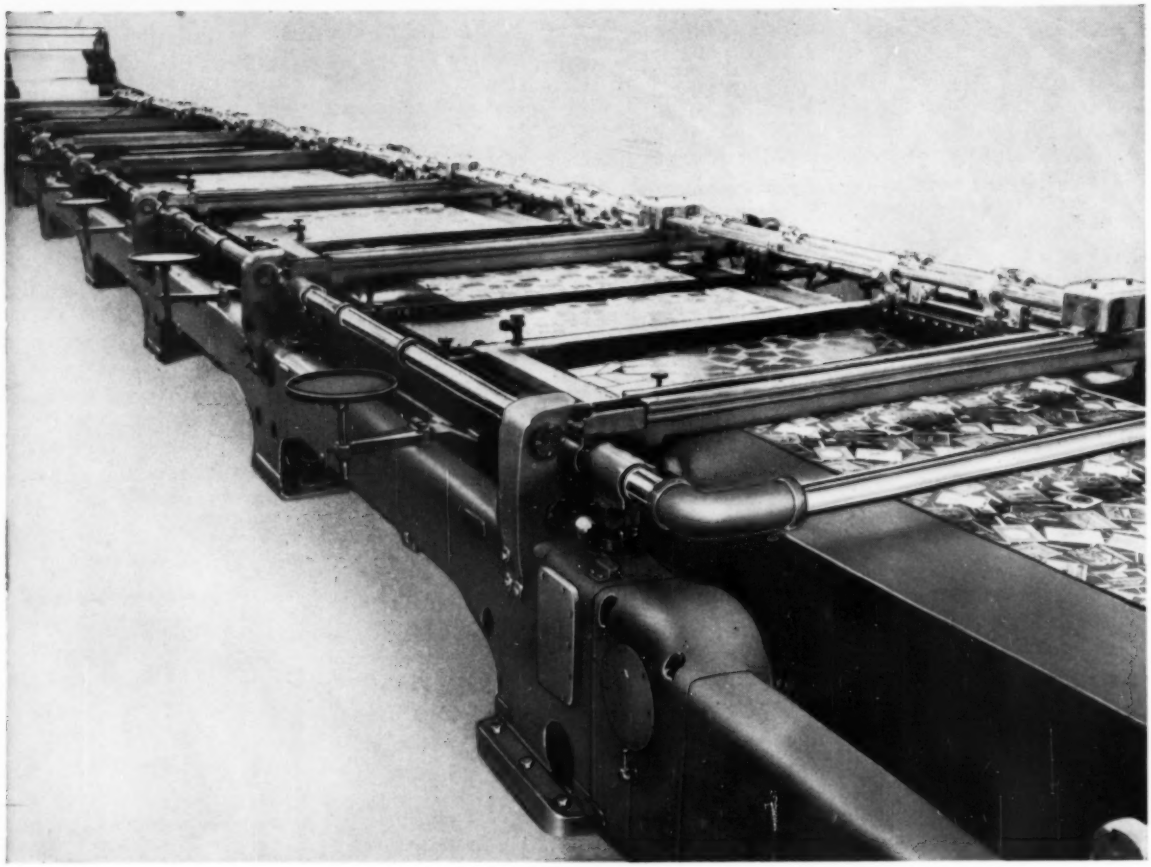

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A TEXTILE WORLD Refresher

The Basic Chemistry Of Dyes and Dyeing—VI

Vat dyes—

- Their principal types
- Soluble variations
- Basic application methods

By **WILLIAM POSTMAN**, Ph.D., Asst. Professor of Textile Chemistry & Dyeing
A. French Textile School, Georgia Institute of Technology

INDIGO (C. I. VAT BLUE 1), also known as Indigotin (C. I. Natural Blue 1), is one of the oldest dyes known. The naturally occurring coloring matter, obtained from several plants (principally species of Indigofera, a large genus of tropical herbs and shrubs of the pea family) was probably used as a dyestuff as long as 5,000 years ago.

Tyrian Purple, another natural dyestuff, obtained from the juices of mollusks (sea snails) found on the shores of the Mediterranean Sea, was used as a dye about 3,500 years ago. Because the quantities available were quite small, this dyestuff was reserved for coloring materials used only by royalty and persons of rank.

Indigo was first prepared synthetically in 1879. In 1901 Indanthrone, C. I. Vat Blue 4, the first of a series of dyestuffs based on anthraquinone, was synthesized.

Indigo and indanthrone are representative of two chemical classes of vat dyestuffs: the indigoid and the anthraquinoid.

The auxochromes in indigo are the —NH groups; when these are replaced by —S— atoms, as in thioindigo, C. I. Vat Red 41, the sulfur atoms act as auxochrome groups.

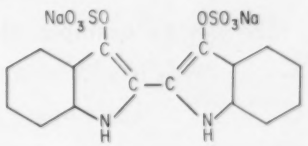
Auxochromes in anthraquinoid vat dyes are usually substituted amino or hydroxyl groups, as in C. I. Vat Red 42 and C. I. Vat Green 1 respectively. Many of the unsubstituted anthraquinone derivatives are colored, for example, C. I. Vat Yellow 4.

The chromophores in both the indigoid and anthraquinoid vat dyestuffs are carbonyl, $>C=O$, groups.

When these dyes are treated with a reducing agent, most commonly $Na_2S_2O_4$ (incorrectly but almost universally referred to as sodium hydrosulfite), the carbonyl groups are reduced to the socalled acid-leuco form, $>C-OH$.

In this reduced state the vat dyes are capable of forming soluble salts by reaction with alkalis. Sodium hydroxide is the one most commonly employed. This water-soluble form of the dyestuff molecule has an affinity for textile fibers. Treatment of the sodium-leuco form of the vat dye with acid converts it into the insoluble acid-leuco form, which has much less affinity for the fibers.

Many vat dyestuffs are available in a solubilized form prepared, for example, by reacting the leuco vat dye with chlorosulfonic acid in the presence of pyridine. Vat dyes may also be solubilized by reacting the parent compound, in pyridine, with a metal such as copper, iron, or zinc, in the presence of sulfur trioxide or chlorosulfonic acid. Indigo was the first vat dye prepared and marketed as a leuco vat ester:



HOW VAT DYES ARE APPLIED

The excellent fastness properties of the vat dyestuffs to light, washing, and bleaching are associated with the insoluble carbonyl form of these dyes. However, vat dyes may be applied to cellulosic fibers in the vat pigment, sodium-leuco, acid-leuco, or solubilized form.

In most cases satisfactory application depends upon conversion to the sodium-leuco form at some stage in the dyeing operation, no matter in what form the dye is first introduced to the fibers. Reconversion (oxidation) to the insoluble pigment form invariably follows.

CONTINUED ON PAGE 88

Any dyer, purchasing agent, chemist or mill official knows the value of purity — in both the purchasing of raw materials and the processing of the finished product.

Take salt, for example. About one-half its cost is freight! So, they say: "Why pay for shipping unwanted impurities?" And the fact is — you can't buy a purer rock salt than Jefferson Island.

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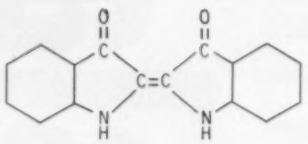
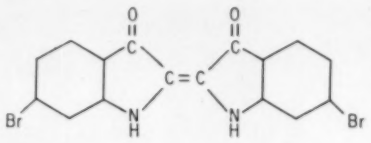
Reduced Method

In the reduced method of applying vat dyes, the vat pigment is reduced with caustic and hydro (sodium hydrosulfite) to the sodium-leuco form before applying it to the material to be dyed.

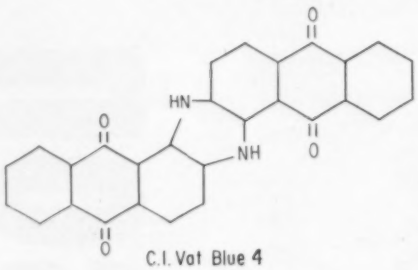
Three well-known methods are used to apply anthraquinone vat dyes. The methods differ in the amount of alkali required in "vatting" (reduction to the sodium-leuco compound), the vatting and dyeing temperatures and the quantities of salt needed in the dyebath to obtain



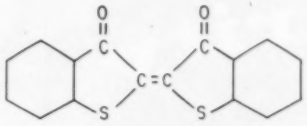
C.I. Vat Blue 1
C.I. Natural Blue 1



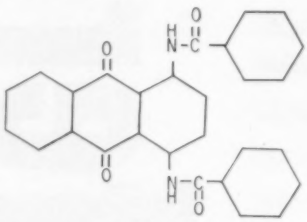
Tyrian Purple



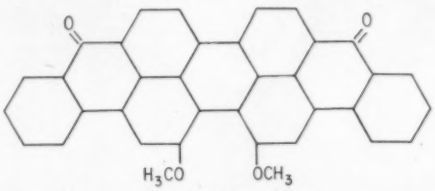
C.I. Vat Blue 4



C.I. Vat Red 41

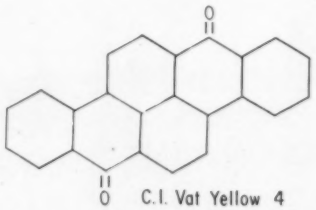


C.I. Vat Red 42



C.I. Vat Green 1

FORMULAS for the various types of vat dyes referred to in the text are shown here.



C.I. Vat Yellow 4

maximum color yield.

Vatting temperatures for the three methods are 140, 120, and 105° F. The corresponding dyeing temperatures are 140, 120, and 70°.

Pigment Method

If the affinity of the sodium-leuco form of the vat dye is so great that the dye tends to rush onto the fiber and give unlevel dyeings or if the material is difficult to penetrate, initial application of the vat dye to the fiber in a form other than the sodium leuco is helpful.

In the pigment method of dyeing, the vat dye is applied to the fibers to be dyed in the unreduced, water-insoluble pigment form; the finely divided particles of vat dye are uniformly distributed over the surface of the fibers to be dyed. A subsequent treatment with caustic and hydro reduces the pigment particles to the soluble substantive sodium-leuco form, which then penetrates and dyes the fibers.

Vat-Acid Method

In the vat-acid method of dyeing, the dyestuff is reduced to the sodium-leuco form. Then the acid leuco (vat acid) is precipitated from the solution in a very finely divided state by the addition of acetic acid and a dispersing agent.

The extremely finely divided particles are then applied to the fibers, to which they adhere mechanically. Treatment with alkali converts the insoluble acid-leuco to the soluble sodium-leuco compound, in which form dyeing takes place.

Oxidation Is Always Necessary

No matter by what method the vat dye is applied to textile fibers, the next step in the dyeing operation is oxidation. The purpose of the oxidation is to convert the water-soluble sodium-leuco form back to the insoluble vat pigment, the form with which the desirable fastness properties of these dyes is associated.

Many different chemicals are used as oxidizing agents; none is satisfactory for all vat dyes. Sodium perborate, sodium bichromate in acetic acid, hydrogen peroxide, sodium hypochlorite and sodium, ammonium, or potassium persulfate are the chemicals most commonly used.

Soluble vat dyes are particularly suitable for producing pale, level dyeings on materials that are difficult to penetrate. These soluble derivatives of vat dyestuffs, known as leuco vat esters, are applied to cellulose by two methods, the nitrite process and the bichromate process.

In the nitrite process, the material to be dyed is impregnated with a water solution of the soluble vat dye and sodium nitrite. A subsequent treatment in a dilute solution of sulfuric acid releases nitrous acid, HNO_2, which regenerates the insoluble vat pigment from the soluble leuco ester.

In the bichromate process, the goods are impregnated with the dye, a wetting agent, and a thickener. The desired color is regenerated from the ester by treating in a dilute solution of sodium bichromate and sulfuric acid.

Both of these methods are designed to regenerate the parent dye, from which the soluble vat was originally prepared, by simultaneous hydrolysis and oxidation.

Soaping Develops True Shade

In the final step in the vat-dyeing operation—soaping—the dyed fibers are treated in a boiling soap solution. This essential operation has a two-fold purpose: (1) to remove any dyestuff formed on the surface of the fibers and (2) to obtain the final shade and improve the lightfastness of the dyeing.

It has been suggested that the vat dye molecules, in the leuco form, are adsorbed in an oriented manner along cellulose molecules. During the soaping operation, the dye molecules come together and form crystals.

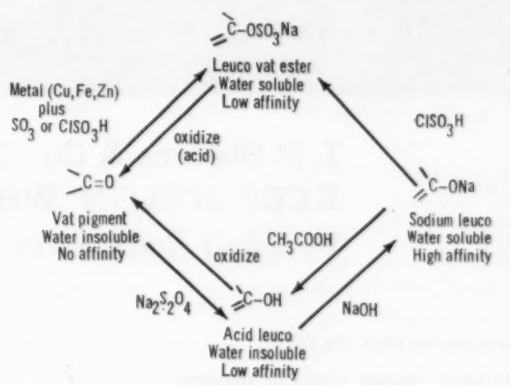
The heat and moisture of the soaping are apparently essential for this transformation. The final shade and fastness properties are therefore believed to be associated not with individual dye molecules but with the crystals of vat dye formed during the soaping.

Vats May Cause Tendering

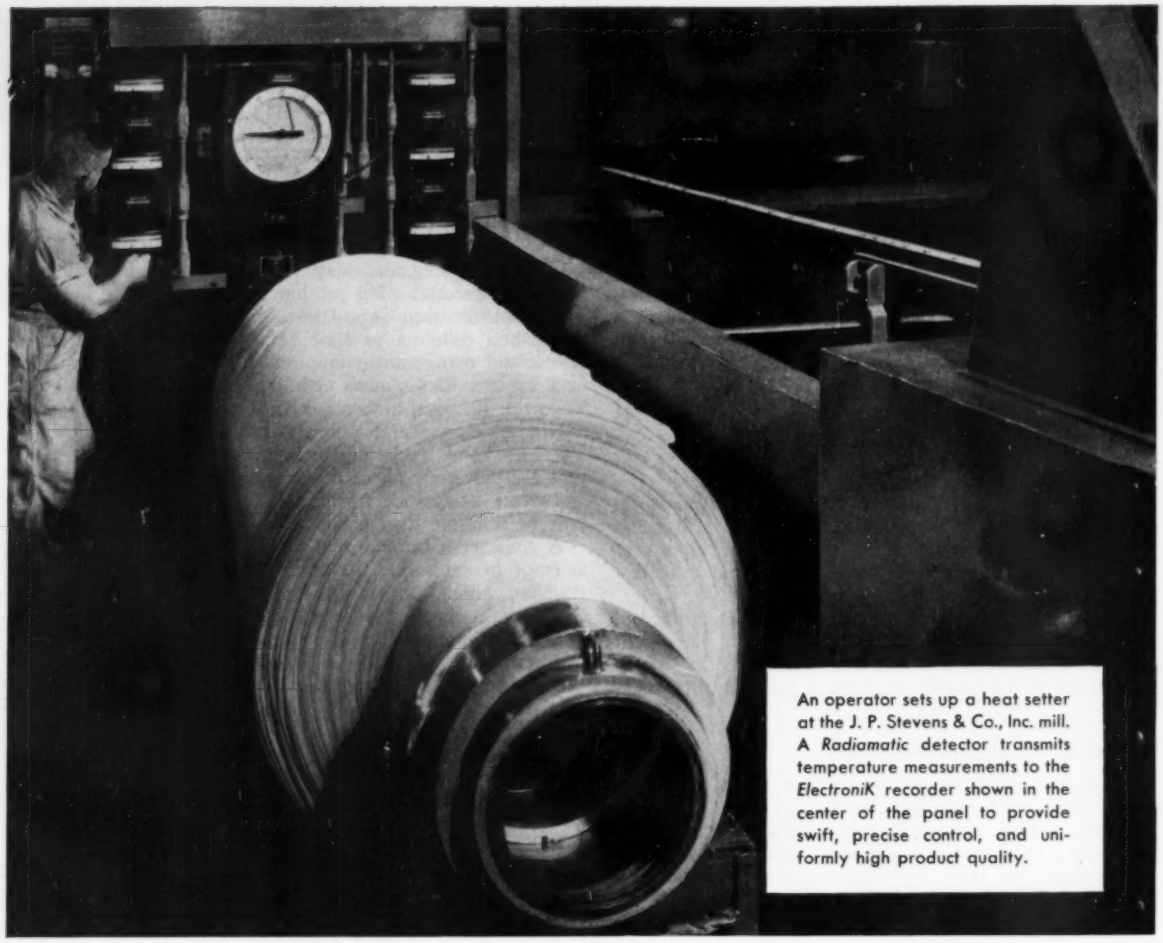
Cellulose is degraded very slowly, with the formation of oxycellulose and other substances, on exposure to light. This photochemical degradation, or tendering, is accelerated when cellulose is dyed with certain dyes such as yellow and orange anthraquinone vat dyes. An example of a vat dye that tenders cellulose severely is C. I. Vat Yellow 4; this dye, however, is very fast to light.

Not all orange and yellow vat dyes tender cellulose. There are some scarlet and red vat dyes and a few violets that also adversely affect cellulose in this manner. Blue and green vat dyes are apparently incapable of causing this type of cellulose degradation.

A considerable amount of work has been done in an attempt to determine the cause and mechanism of this reaction, which consists essentially of a transfer of light energy from the spot at which it is absorbed to another at which a chemical reaction takes place. The exact role of the dyestuff molecule is not as yet clear, but it has been shown that hydrogen peroxide is formed by the action of light in the presence of moisture and oxygen on a dyeing with a vat dye known to cause tendering.



THE BASIC REACTIONS that are used in solubilizing and oxidizing vat dyes are shown here in condensed form. Vat dyes, represented by $\diagdown C{=}O$, are reduced to the acid-leuco form, $\diagdown C{-}OH$, by sodium hydrosulfite; oxidation of the acid-leuco form converts it to the original vat dye. Sodium hydroxide converts the acid-leuco to the water-soluble sodium-leuco form, $\diagdown C{-}ONa$; the acid leuco can be regenerated from the sodium leuco by the addition of acetic acid. Solubilized vat dyes, $\diagdown C{-}OSO_3Na$, can be prepared either from the sodium-leuco form by reaction with chlorosulfonic acid, $ClSO_3H$, or from the parent vat dye by reaction with chlorosulfonic acid in the presence of a metal. The parent compound is obtained when the solubilized form is oxidized in acid medium.



An operator sets up a heat setter at the J. P. Stevens & Co., Inc. mill. A *Radiamatic* detector transmits temperature measurements to the *ElectroniK* recorder shown in the center of the panel to provide swift, precise control, and uniformly high product quality.

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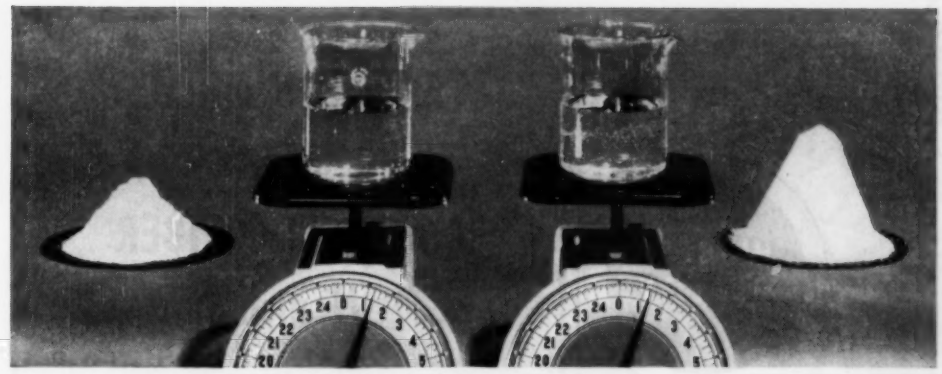
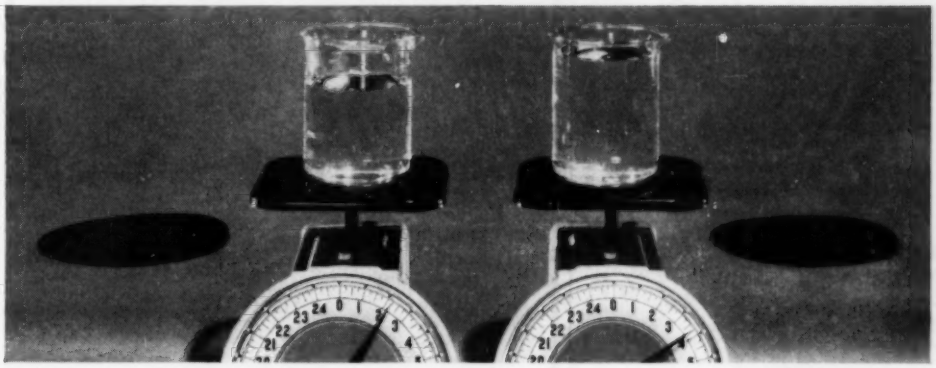


Before

Weight and temperature of water (68°F.) in each beaker is identical. But the two stacks of chemicals are different — *3 times more* potassium carbonate (right) than sodium carbonate (left).



After

adding each chemical to a beaker, both are completely dissolved. You can *see* the greater solubility of potassium carbonate in the higher fluid level and heavier weight of the righthand beaker. It has *3 times more* carbonate in solution than the other beaker containing sodium carbonate.

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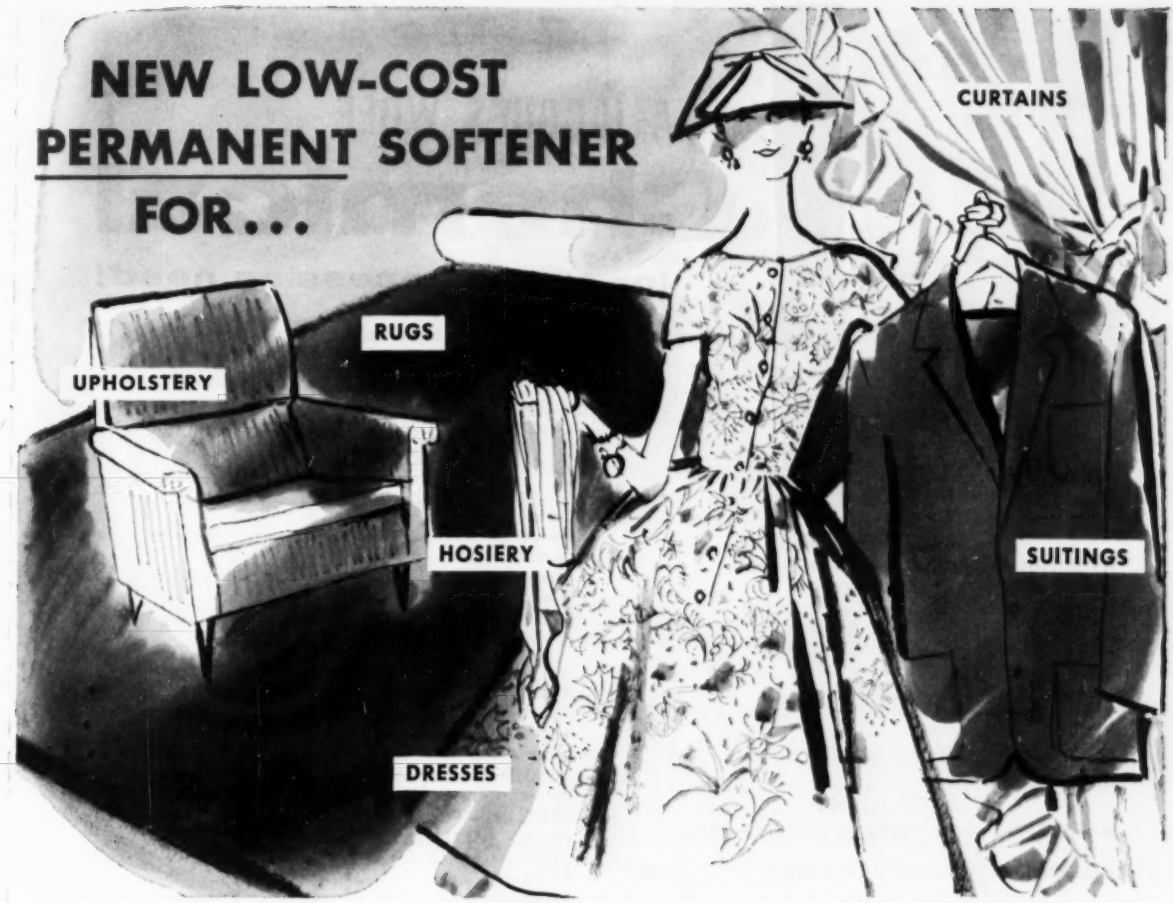
. . . New FTC definitions and classifications.

Watch for it in the September issue!



Emulsifiable
A-C® Polyethylene

OFFERS SUPERB "HAND" PLUS

- HIGHER ABRASION RESISTANCE
- IMPROVED TEAR STRENGTH
- EXTRA CREASE RESISTANCE
- REDUCED NEEDLE CUTTING

Whatever fabrics you finish, you can benefit from the new textile finishes now being formulated with A-C Polyethylene.

Already widely accepted as a *softener and finishing agent* to impart superb "hand," the new emulsions containing A-C Polyethylene benefit every type of synthetic and natural fiber in some way over other textile finishes. In addition to better "hand," they provide higher abrasion resistance, improved tear strength, extra crease resistance, permanence through multiple cleaning cycles, and better sewability through reduced needle cutting.

In wash-and-wear finishes, for example, A-C Polyethylene overcomes loss of "hand" and tear strength when used along with the thermosetting resins commonly employed in finishing wash-and-wear.

Write today for more information. Why not find out all about this new advance in textile finishing? Your textile chemical supplier either has an A-C Polyethylene finish on hand or can formulate one for your specific needs. Anionic, cationic and nonionic emulsions are available to fit all needs. (We are manufacturers of resins, not finishing emulsions.) Or write to us direct for complete information at the address below.

Allied Chemical

SEMET-SOLVAY PETROCHEMICAL DIVISION

Dept. 555-AH, 40 Rector Street
New York 6, N. Y.

National Distribution • Warehousing in Principal Cities

CIRCLE 93 ON READER SERVICE CARD 93

A JACQUES WOLF Chemical for every processing need!

For any stage of textile processing, Jacques Wolf & Co. has a complete line of chemicals and specialties. Whatever your particular problem, we shall welcome the opportunity of submitting samples custom-formulated to meet your needs. Write for our catalog.

HYDROSULFITES

HYDROSULFITE AWC—($NaHSO_2CH_2O.2H_2O$)
For stripping and discharge printing.

HYDROSULFITE OF SODA—(Conc.) ($Na_2S_2O_4$)
For reduction of vat colors. Non-Dusting.

HYDROSULFITE B Z—($Zn(OH)HSO_2CH_2O$)
For stripping wool stock, shoddy, rags.

HYDROZIN*—($Zn(HSO_2CH_2O)_2$)
For stripping acetate dyes and discharge printing on acetate dyed grounds.

HYDROSULFITE QD—For rapid dissolving in continuous vat dyeing.

DE-SIZING

AMPROZYME*—For liquefaction of starches and proteins in de-sizing textiles.

DIASTAZYME*—Used as an economical de-sizing agent for starch-sized textiles.

SCOURING

ORATOL L-48*—A synthetic detergent with excellent penetrating and emulsifying properties.

BENSAPOL—A liquid detergent derived from Monopole Oil particularly useful for scouring wool.

LOUPOLE W-950—A penetrating detergent for use in scouring or boiling off.

PARNOL—Sodium Dodecyl Benzene Sulphonate.

SELLOGEN GEL — A synthetic detergent used also in dyeing and as a wetting agent for all natural and synthetic fibre.

DETERGENT W-1750A—Has anionic and non-ionic properties; excellent for scouring nylon and dacron to remove throwster sizings; penetrates and lifts graphite streaks.

DYEING

WETSIT CONC.*—A synthetic aromatic compound for wetting out in both the dyeing and scouring operations.

WETSIT NI—100% non-ionic wetting agent.

MONOPOLE OIL*—A highly concentrated, double sulphonated castor oil for a wide range of operations.

APASOL*—Particularly effective in the dispersion of acetate printing colors. A sulphonated ester with a high combined SO_3.

LOMAR PW*—Dispersing agent for pad dyed vat colors; also retardant in the dyebath.

SULPHONATED OILS—Castor, Cod, Sperm, Olive, Neatsfoot, Pine, Red, Teaseed, etc.

FINISHING

ACETATE OF ALUMINA—Water-clear solution, sulphate and iron free; used for waterproofing.

ALUMINUM FORMATE — For waterproofing; clear, water-white, stable; sulphate, chloride and iron free.

LUPOSEC—Stable emulsion of mineral waxes with aluminum acetate. For one bath method of waterproofing.

STATLESS—Paste for reducing static on all fibres.

CREAM SOFTENERS—In different strengths and varied degrees of alkalinity for a soft full hand to all types of fabrics.

LUPOMIN*—A series of cationic nitrogen compounds used for softening and finishing textiles.

CHAFE REMOVER W-545-T—A finishing oil for textiles, particularly silk fabrics, to remove chafe marks.

LUXAPOLE W-1054-B—A superior, sulphonated oil for finishing all fine fabrics.

OIL S-261C—A clear, amber oil used as a penetrator and softener for cotton cloth; aids in uniform shrinkage.

SOLUBLE WAX JB—A dispersed vegetable wax for full body and high lustre to cotton goods.

WEIGHTER FINISH M—For heavier body and better hand for all fabrics.

PRINTING

SUPERCLEAR*—Prepared from natural gums as a thickener for printing all types of textiles.

SUPERGUM—A cold-water soluble gum.

PIGMENT WHITES—Dispersed suspension of white pigments with plasticizers for use on light grounds, or white discharge on dyed ground shades.

ACETATE OF CHROME—As a mordant in dyeing and printing mordant colors. Also for dyeing mineral shades.

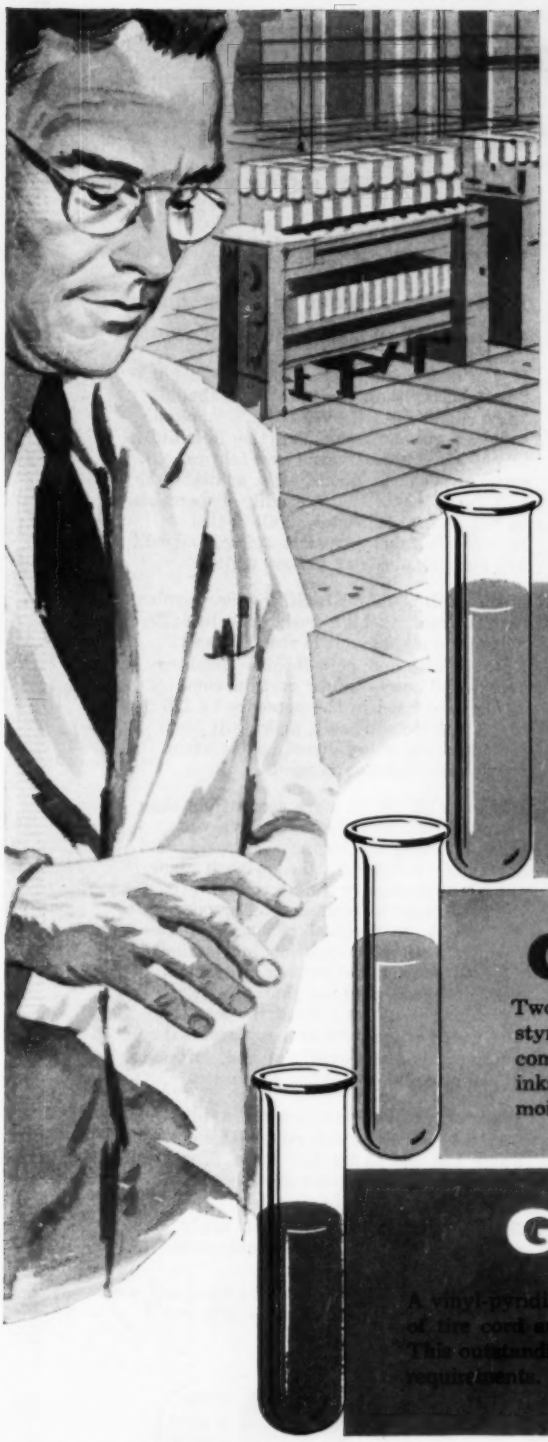
TRAGACANTH—Gum solutions in various concentrations for extra clear, sharp prints when used with acid, direct or insoluble Azo dyestuffs.

OTHER SPECIALTIES

Mordants	Gums—Arabic, Karaya and Tragacanth
Defoamas	Fiber Lubricants
Sizes	Thickeners
Delustres	Wool Oils
Penetrants	Sulphonated Oils (Various Bases)
Weighting Finish	

JACQUES WOLF & CO. Chemicals PASSAIC, N.J.

*Reg. U.S. Pat. Off.



CONSIDER THESE
VERSATILE NEW LATICES
for

TEXTILE TREATING

Keyed to modern developments in the textile industry, these new latices offer many advantages to textile manufacturers and processors. Latices from General Tire are produced under strictly controlled conditions, assuring maximum quality and uniformity. Send for samples, prices and literature appropriate to your operation, and ask for always-available technical service.

ACRI-FLO

Two styrene-acrylic latices having exceptional UV-heat and light stability, adhesion and pigment binding properties, first proved in applications in the paint industry. Of extra importance to textile applications is Acri-Flo's extremely small particle size, which assures excellent saturating and pigment binding.

GEN-FLO

Two styrene-butadiene latices, containing 60 or 67 per cent styrene. They have excellent hardening properties in latex compounds, and serve well as vehicles in textile printing inks. Gen-Flo also offers above-average water resistance and moisture-vapor transmission characteristics.

GEN-TAC

A vinyl-pyridine latex adopted as the industry standard for treatment of tire cord and fabrics to assure optimum rubber-to-fabric adhesion. This outstanding adhesive quality may well serve other textile treating requirements.

For complete information
on any of these unique latices, write to

THE GENERAL TIRE & RUBBER COMPANY
Chemical Division • Dept. W-5 • Akron, Ohio, U. S. A.

Creating Progress Through Chemistry

Chemical Division
GENERAL
THE GENERAL TIRE & RUBBER CO.

CIRCLE 95 ON READER SERVICE CARD

Send for this New Catalog

CHROMALOX ELECTRIC FAR-INFRARED HEAT for paper and textiles

This new 8-page catalog describes the full line of Chromalox Far-Infrared heaters. Contains sizes, ratings and uses for each one, with a dozen photographs of typical applications.

Fast, uniformly distributed Chromalox Far-Infrared heat has many production advantages. There is no need for stand-by heat. Get rid of leaking lines, smoke, fumes, flames, glare. Working area will be cleaner and cooler . . . Chromalox Far-Infrared heat stays *on the job.* Maintenance costs are minimum, since the all-metal heaters have no moving parts and are practically indestructible.

Standard heaters for most jobs are ready for immediate shipment from the world's largest stock. For special applications, your Chromalox Representative is ready with factory design-engineering service.

Get fast, clean, safe, economical answers to your heating problems. Send for Catalog G-62 today. Edwin L. Wiegand Company, 7565 Thomas Boulevard, Pittsburgh 8, Pennsylvania. 91820

O.K. . . . send me Catalog G-62.

Name_____

Title_____

Company_____

Address_____

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☐ Have a Chromalox Sales-Engineering Representative call me.

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INDUSTRIAL • COMMERCIAL • RESIDENTIAL
EDWIN L. WIEGAND COMPANY
7701 Thomas Boulevard • Pittsburgh 8, Pa.

96 CIRCLE 96 ON READER SERVICE CARD

The Laurel Leaf

BUSINESS MAGAZINE EDITION

LAURAVEL SC

A versatile softener for finer finishing of all types of yarns and fabrics.

If you are looking for a softener just a "little better than the rest," you should know about LAURAVEL SC, a nonionic softener recommended for the fine finishing of all types of yarns and fabrics . . . especially cotton goods. It's available as a soft liquid paste that's readily dispersable in hot water. It bestows full-bodied softness to fabrics, resists aging, and will not alter shades nor yellow whites.

Much of LAURAVEL SC's wide popularity results from its high resistance to salts, acids, and alkalies. It is stable in salt, Epsom Salt, and acid-chrome finishing baths, and may—under certain conditions—be used in the presence of 1% to 2% solutions of salt, making it ideal for softening many direct colors where a salt color fixative is used.

LAURAVEL SC is more compatible than many of its anionic counterparts with other finishing agents, such as resins and dextrines. Fabrics finished with it show excellent resistance to scorching. Used as a top softener in resin-treated goods, it is stable to residual products in the goods. It gives a superior lubrication to improve sewing and cutting properties, and adds good napping characteristics to fabrics. It gives a hand far less limp and raggy when used as a replacement for many conventional oils and softeners in compressive shrinking processes.

It's really easy to prepare and apply LAURAVEL SC—just mix with hot water and add to the last rinse. For finishing mixes, it may added directly to the batch and boiled up with the rest of the ingredients. And, you can apply it with virtually any type of equipment.

Write for a generous free sample and see for yourself what excellent results you'll obtain!

Laurel Brand — 50 YEARS OF SERVICE TO INDUSTRY 1909-1959

Laurel SOAP MANUFACTURING CO., INC.
TIOGA, THOMPSON & ALMOND STS., PHILA. 34, PA.

Warehouses: Paterson, N. J. Chattanooga, Tenn. Charlotte, N. C. Greenville, S. C.

CIRCLE 250 ON READER SERVICE CARD
CIRCLE 97 ON READER SERVICE CARD→

the new
"white"
resin that always
washes white!

RESLOOM* E-63

NEW CHLORINE RESISTANT FINISH SPECIALLY FORMULATED FOR WHITE W&W COTTONS

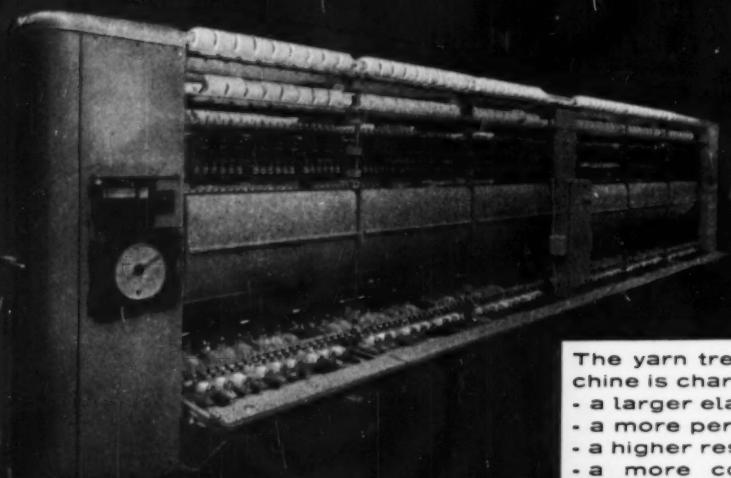
Protects whites against chlorine yellows, laundry-soil greys, and scorch discoloration. No amine odors in processing. Outstanding wrinkle recovery after either home or commercial laundering. And accurate control to produce a wide variety of hand. That's the Resloom E-63 story and it's yours to tell your customers. **Write today for complete processing data** to Monsanto Chemical Company, Plastics Division, Room 702, Springfield 2, Massachusetts.

*RESLOOM, STYMER, LYTRON: REG. U. S. PAT. OFF.

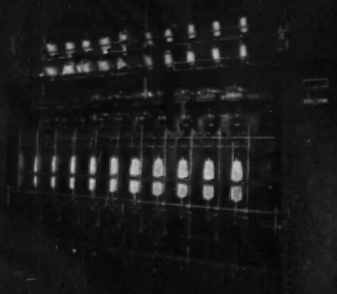
Monsanto

Other Monsanto textile chemicals include Resloom E-50 cyclic urea resins; Resloom HP and M-75 melamine resins; AC catalysts; Stymer* sizes; and Lytron* Polystyrene Latices.

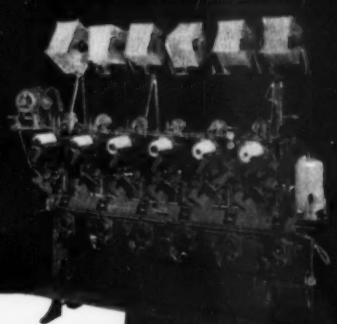
all



The yarn treated on this machine is characterized by:
- a larger elasticity
- a more permanent crimp
- a higher resistance
- a more constant tinctorial affinity.



AR. 4 Assembling Twisting Machine with large capacity



M Winder

with its special attachment for building bobbins of controlled hardness

ATELIERS ROANNAIS
de Constructions Textiles
ROANNE - Loire - FRANCE

3rd International Exhibition of Textile Machinery, Milan 12-21 September 1959—Section G—Stand 7096-7099.

The Milan Textile Show

• The 3rd International Textile Machinery Exhibition will be held next month in Milan, Italy. Over 600 exhibitors from 11 European countries and from the U. S. will show machinery and equipment to what is expected to be the largest crowd ever to attend a textile machinery show.

• One of the world's major textile events, this exhibition continues the series of shows begun at Lille, France, in 1951 and continued at Brussels, Belgium, in 1955.

• Here are details of the exhibition—

Location: Fair grounds, Milan, Italy

Dates: September 12-21 (including Saturdays and Sundays)

Hours: Visitors, 9:30 a.m. to 6 p.m.; exhibitors, 8:30 a.m. to 7 p.m.

Host: Comite Europeen des Constructeurs de Materiel Textile, Giovanni Malaspina, general secretary

U. S. representative: Gunther Frankl, 515 Madison Ave., New York 22, N. Y.

Official travel agent: Thos. Cook & Son, 587 Fifth Ave., New York 17, N. Y.

Direct air flights (New York-Milan): Alitalia (Italian Air Lines), New York, N. Y.

Round-trip plane fares: first-class $916.20, economy-class $561.60

Services available: information, interpreters, press, banks, travel agents, restaurants, car park, stores, first aid

Countries exhibiting:

	No. of Exhibitors	Floor Space
Belgium	19	2,613 (sq. meters)
France	51	3,252
West Germany	174	9,954
Great Britain	58	2,952
Holland	10	596
Italy	218	10,785
Switzerland	49	3,476
U. S. A.	26	1,221
Various (Austria, Denmark, Spain Sweden	17	594
	622	35,443

Photos courtesy of the Commercial Office of the Italian Consulate, New York, N. Y.

Guide to Exhibitors

UNITED STATES

AMERICAN LAUNDRY MACHINERY
New York, N. Y.

ARMSTRONG CORK CO.
2502 Riggs Ave., Lancaster, Penn.
Products: Accotex roll coverings and aprons, loom take-up-roll coverings, loom press-roll coverings, loom binder, clearer coverings.
Representatives: Jay Hershey, R. C. Stork, G. A. Smith, A. A. Thouin, M. Preysch, N. Curwen, R. Schneider, T. L. Hill, R. Minet

BARBER-COLMAN CO.
Rockford, Ill.
Products: 66 GSH warp-drawing machine.
Representatives: W. P. Turner, C. Almond, P. Middleton, M. Konig, W. Beck, T. Tegland

CROMPTON & KNOWLES CORP.
Worcester, Mass.
Products: The PAPA pick-and-pick automatic loom (worsted), the C-7A automatic bobbin-changing dobby loom (cotton), and the shuttleless, bobbinless needle loom (narrow fabrics).
Representatives: Frederick W. Howe, Jr., Joseph F. Molloy, Albert Palmer, William O. Fisher, Andre Manuel

CURLATOR CORP.
E. Rochester, N. Y.
Products: Model 40-B Rando-Feeder and Rando-Webber.
Representatives: Gordon B. Harvey, Dr. K. T. Lendt, Richard R. Castor

DEERING MILLIKEN RESEARCH CORP.
Spartanburg, S. C.
Products: Model 2086 (fine-denier) Agilon-yarn equipment; Model 2110 (medium-denier) Agilon-yarn equipment.
Representatives: Russell B. Newton, N. C. Armitage, C. G. Evans

DRAPER CORP.
Hopedale, Mass.
Products: Shuttleless loom weaving a denin warp; a pictorial exhibit of other models of looms.
Representatives: Thos. H. West, Marshall Newell, Harry Foster, G. Samaden

EASTMAN MACHINE CO.
Washington & Goodell Sts., Buffalo, N. Y.
Exhibit handled by Milan representatives, Giovanni Conti & Nipoti.

FABRIONICS CORP.
New York Ave., Halesite, N. Y.
Products: Warp-yarn monitor, Quix stop end-break detector, Una-mag tension control.
Representatives: Olen P. Marks, Carl Land

JAMES HUNTER MACHINE COMPANY
No. Adams, Mass.
Products: Fiber Meter blending equipment.
Representatives: James H. Hunter, W. F. Leineweber, Karl T. Lendt

KIDDE TEXTILE MACHINERY CORP.
35 Farrand St., Bloomfield, N. J.
Products: Kidde knitter for net and rubber; a Kidde knitter for lace.
Representatives: Kidde's German subsidiary, Kidde GmbH.

PROCTOR & SCHWARTZ, INC.
7th & Tabor Rd., Philadelphia 20, Pa.
Products: Impregnation, drying, tentering, and curing equipment for anticrease finishing; the new Artos screen-printing machine, system Stoffel; and two types of Artos printing-steaming units.
Representaives: Proctor & Schwartz's German affiliate, Artos Maschinenbau

PROSPERITY CO.
Syracuse, New York

REECE CORP.
Waltham, Mass.

ROBERTS CO.
Sanford, N. C.
Products: Arrow M-1 (cotton-system) spinning frame, Arrow WM-2 long-fiber (worsted-system) spinning frame, roving frame.
Representatives: Robert E. Pomeranz, Jonathan N. Pomeranz, Germinal N. Giraudi, Alejandro Bautista O., Fred Glass

SACO-LOWELL SHOPS
60 Batterymarch St., Boston, Mass.
Products: Preparatory and spinning machinery for the handling of cotton and synthetic fibers.
Representatives: R. P. Newell, W. F. Lowell, H. M. Dolby

SCOTT & WILLIAMS, INC.
350 Fifth Ave., New York, N. Y.
Products: Knitting machines.

SINGER SEWING MACHINE CO.
149 Broadway, New York, N. Y.
Exhibition handled by Singer's Italian affiliate.

SOUTHERN TEXTILE MACHINERY CO.
Paducah, Ky.
Products: Stylemaster, Sotco, and Model P loopers with various looper accessories.
Representatives: Giovanni Conti & Nipoti

SUPER TUFTER MACHINERY CO.
Fort Oglethorpe, Ga.
Products: Carpet-tufting machinery.

SUPREME KNITTING MACHINE CO.
94-02 104th St., Ozone Park 16, N. Y.
Products: Model SAAF/C, Model BR/W, and Model MJ knitting machines.
Representative: Gianni Ferraris

TORRINGTON CO.
Field St., Torrington, Conn.
Products: Needles for knitting, sewing, felting, tufting; needle bearings and roller bearings.
Representatives: Vincent Zampichelli, F. I. H. Wood, Alexander Frigyes, James Wears, Harold Deming, W. R. Reid, Jr.

UNIVERSAL WINDING CO.
Providence, R. I.
Products: Unifil. #44 Roto-Coner, Model 10 Ring Twister.
Representatives: Robert Leeson, Paul P. Johnson, J. A. Nasmith, H. H. Richardson, W. V. Geedhme, A. N. Verrier, J. F. Ernault, H. Raus, P. Bossi, Rene Aghion

WARNER & SWASEY CO.
5701 Carnegie Ave., Cleveland 3, Ohio
Products: M-3700 wide-set-over pin drafter intersecting draw frame with dual-can delivery and eight-ball creel; M-3680 dual-head pin drafter intersecting draw frame with dual ball delivery and can creel.
Representatives: Thomas L. Stilwell, Herman B. Huster, Charles Watt, Sergio Giraudi

WARNER ELECTRIC BRAKE & CLUTCH CO.
Beloit, Wis.

WHITIN MACHINE WORKS
Whitinsville, Mass.
Products: Super-Lap machine, Even-Draft drawing frame, Model Super J comber, Quik-Set roving frame, Model K spinning frame (Piedmont) full length, Model KW spinning frame (Piedmont-American System) 72 spindles.
Representatives: J. Hugh Bolton, E. Kent Swift, Jr., J. H. Bolton, Jr., E. M. Kennedy, Robert Dalton, Dr. Zoltan Szaloki, George F. McRoberts, Andre Manuel, G. Samaden, Eric Morvay, and A. E. Aspinall

AUSTRIA

HETTWER & CO.
Micheldorf, Austria
Products: Knitting machine

REISINGER CAMILLO
Wien, Austria

REISINGER RUDOLF
Wien, Austria
Products: Printing

RUSCH-WERHE & CO.
Dornbirn, Austria
Products: Automatic looms

SCHWABE KURT K.G.
Solbad Hall, Austria
Products: Automatic looms

ZIMMERS' SERBEN K.G.
Kufstein, Austria
Products: Printing

BELGIUM

BARATTO L. ETS.
Brussels, Belgium
Products: Embroidering

BEKA MANUF. BELGE. D'AIGUILLES S. A.
Eupen, Belgium
Products: Accessories

CALLEBAUT-DE BLICQUY ETS.
Brussels, Belgium
Products: Finishing

CHARPENTIER & C., ANCIENS ATELIERS
Dolhain, Belgium
Products: Preparatory

DOLNE & DELAWAID S.P.R.L.
Verviers, Belgium
Products: Accessories

DUESBERG-BOSSON S. A.
Ensival-Verviers, Belgium
Products: Wool preparation

GILBONS ATELIERS S.P.R.L.
Aalst-Hordersem, Belgium
Products: Winders

HOUGET ATELIERS S. A.
Verviers, Belgium
Products: Wool preparation; weaving

HOUBEN ETS.
Verviers, Belgium
Products: Accessories

JULIEN (LOUIS) ATELIERS
Verviers, Belgium
Products: Finishing

LA DURANITRE S. A.
Herstal, Belgium
Products: Gill Box

METALAR S.P.R.L.
Mont Saint Amand, Belgium
Products: Finishing

O. J. P. Divion "Cotton"
Gentbrugge, Belgium
Products: Accessories

PICANOL METIERS AUTOMATIQUES S. A.
Ypres, Belgium
Products: Automatic looms

RAXHON ATELIERS S. A.
Theux-Verviers, Belgium
Products: Finishing

DEUTSCHER SPINNEREIMASCHINENBAU INGOLSTADT *Ingolstadt/Donau* GERMANY

SPINNING MACHINERY FROM INGOLSTADT THROUGHOUT THE WORLD!

SPINNING MACHINERY

FOR COTTON · ARTIFICIAL STAPLE FIBRE AND WORSTED

Planning and supply of complete spinning plants based
on latest experience in spinning technology and mechanical engineering
Spares for spinning machinery · Conversions of draft systems

SPINNING MACHINERY FROM INGOLSTADT THROUGHOUT THE WORLD!

DEUTSCHER SPINNEREIMASCHINENBAU INGOLSTADT *Ingolstadt/Donau* GERMANY

3rd International Exhibition of Textile Machinery, Milan, Sept 12th-21st, Our stand is in Hall G—Stand Unionmatex.

SNOECK ATELIERS S. A.
Ensival, Belgium
Products: Looms

TEXTICUIR S. A.
Brussels, Belgium
Products: Accessories

VAN DE WIELE S. A.
Marke-Lez Coutral, Belgium
Products: Looms

VANMARCHE FRERES ETS.
Ypres, Belgium
Products: Accessories

DENMARK

HENRIKSEN VALD.
Sœborg/Copenhagen, Denmark
Products: Finishing

NILFISK
Copenhagen, Denmark
Products: Accessories

ROTHENBORG
Copenhagen, Denmark
Products: Seaming

TITAN
Copenhagen, Denmark
Products: Drawing-in machine; tying-in machine

ENGLAND

BARBER-COLMAN CO.
Sale, Nr. Manchester, England
Products: Winding; warping

BATES TEXTILE MACHINE CO.
Leicester, England

THE BENTLEY ENGINEERING GROUP LTD., including:

THE BENTLEY ENGINEERING CO. LTD.
Leicester, England
Products: Knitting

MELLOR BROMLEY (AIR COND.) LTD.
Leicester, England

PEGG, S & SON LTD.
Leicester, England
Products: Finishing

WILDT MELLOR BROMLEY LTD.
Leicester, England
Products: Accessories; knitting

BOLTON, THOMAS, & SONS LTD.
Widnes, England
Products: Finishing

BONAS BROS. WEAVEMATIC LOOMS (ENGLAND) LTD
Castle Gresley, England

BRITISH NORTHROP LTD.
Blackburn, England
Products: Weaving

BRITISH TUFTING MACHINERY LTD.
London, England
Products: Tufting

BUTTERWORTH & DICKINSON LTD.
Burnley, England
Products: Weaving

CARDING SPECIALISTS CO. LTD.
Mirfield, England

CASABLANCAS HIGH DRAFT CO. LTD.
Salford, England
Products: Preparatory; spinning

THE CHARNWOOD ENGINEERING CO. LTD.
Leicester, England
Products: Knitting

CRABTREE TEXTILE ACCESSORIES LTD.
Colne, England

CROWTHER LTD.
Thurmaston, Leicester, England
Products: Winding; warping

THE DAYTON RUBBER CO. LTD.
Dundee, England

DRONSFIELD BROS. LTD.
Oldham, England
Products: Accessories

DURRANT, G. & SONS LTD.
Stockport, England

EADIE BROS. & CO. LTD.
Manchester, England
Products: Preparatory; spinning

THE ENGLISH CARD CLOTHING CO. LTD.
Lindley, England
Products: Preparatory; spinning

FANGHANEL, P. & CO. LTD.
London, England

F.N.F. MACHINERY MANUFACTURING CO. LTD.
Burton-on-Trent, England
Products: Winding; warping; knitting

GRIMSLEY & CO. (LEICESTER) LTD.
Leicester, England

HALL, B.P. (TEXTILES) LTD.
Nottingham, England

HARDAKER, JOHN T. LTD.
Bradford, England
Products: Weaving

HATTERSLEY, GEORGE & SONS LTD.
Keighley, England
Products: Weaving

HOLT, THOMAS LTD.
Rochdale, England
Products: Winding; warping

HUNT & MOSCROP LTD.
Middleton, England
Products: Finishing

KIRKLAND, A. & CO. LTD.
Syston, Leicester, England

MATHER & PLATT LTD.
Manchester, England
Products: Finishing

MEINERS OPTICAL DEVICES LTD.
London, England

MONK, S. A. (SUTTON-IN-ASHFIELD) LTD.
Sutton-in-Ashfield, England
Products: Accessories; knitting

NORTON, SIR JAMES FARMER, & CO. LTD.
Salford, England
Products: Finishing

PETRIE & MCNAUGHT LTD.
Rochdale, England
Products: Preparatory; spinning; finishing

RADCLIFFE ENGINEERING CO.
Radcliffe, England
Products: Tufting

REDDITCH HOSIERY NEEDLES LTD.
Studley, England
Products: Knitting

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3rd INTERNATIONAL EXHIBITION
TEXTILE MACHINERY
MILAN—12/21 September 1959
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Hannover, Germany
Bldg. G, Booth 7408-13
Products: Accessories

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Tailfingen/Wurtt., Germany
Bldg. C, Booth 3036
Products: Knitting and embroidering

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Creussen/Ofr., Germany
Bldg. C, Booth 3114
Products: Knitting and embroidering

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Kempten/Allgau, Germany
Bldg. G, Booth 7058
Products: Spinning

ALUCOLOR FMN SCHUSTER & CO.
Koln-Zollstock, Germany
Bldg. C, Booth 3013
Products: Weaving; knitting and embroidering

ARTOS-MASCHINENBAU
Hamburg, Germany
Bldg. H, Booth 1061-88
Products: Finishing

AUGSBURGER TEXTIL-MASCHINEN GmbH.
Augsburg, Germany
Bldg. A, Booth 1225
Products: Spinning

BARMER MASCHINEN-FABRIK A.G.
Remscheid-Lennep, Germany
Bldg. G, Booth 7040-41
Products: Spinning

BECKER, WILHELM
Mettmann/Rhld., Germany
Bldg. F, Booth 6353
Products: Weaving

BELLMANN, EUGEN
Hagen-Haspe, Germany
Bldg. A, Booth 1053
Products: Finishing

BENTLER-WERKE A.G.
Bielefeld, Germany
Bldg. A, Booth 1364
Products: Finishing

BERGEDORFER EISENWERK A.G. (UNIONMATEX)
Hamburg-Bergedorf, Germany
Bldg. G, Booth 7009-38
Products: Weaving

BERLINER TEXTIL-MASCHINEN GmbH.
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Bldg. G, Booth 7049-62
Products: Spinning

BERNHARDT GmbH., F.
Bremen-Farge, Germany
Bldg. G, Booth 7050-61
Products: Spinning

BERNING & CO., OTTO
Schwelm/Westf., Germany
Bldg. B, Booth 2069
Products: Seaming

BOEHRINGER GmbH., GEBR.
Goppingen, Germany
Bldg. E, Booth 5006
Products: Accessories

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Stuttgart-Zuffenhausen, Germany
Bldg. B, Booth 2008
Products: Accessories

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Dusseldorf, Germany
Bldg. A, Booth 1245-60

CROON & LUCKE GmbH.
Mengen/Wurtt., Germany
Bldg. F, Booth 6334
Products: Spinning

DEUTSCHE HOLZVEREDELUNG A. & E. SCHMEING
Wurdinghausen, Germany
Bldg. F, Booth 6316-17
Products: Weaving

DEUTSCHER SPINNEREI-MASCHINENBAU INGOLSTADT (UNIONMATEX)
Ingolstadt, Germany
Bldg. A, Booth 7009-38
Products: Spinning

DEUTSCHE STEINZEUG-WARENFABRIK
Mannheim-Friedrichsfeld, Germany
Bldg. A, Booth 1227
Products: Finishing

DIETZE & SCHELL
Coburg, Germany
Bldg. E, Booth 5178
Products: Weaving

DREI-S-WERK
Schwabach/Bayern, Germany
Bldg. G, Booth 7322
Products: Spinning

DURKOPPWERKE A.G.
Bielefeld, Germany
Bldg. B, Booth 2031-2
Products: Seaming

EGELHAAF, C.C.
Reutlingen-Betzingen, Germany
Bldg. F, Booth 6312-21
Products: Weaving

EHEMANN GmbH., KURT
Delmenhorst/Oldb., Germany
Bldg. A, Booth 1350
Products: Finishing

EISENWERK PETER WOLF
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Bldg. A, Booth 1345
Products: Finishing

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Munchen-Putzbrunn, Germany
Bldg. A, Booth 1201
Products: Finishing

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Bldg. F, Booth 6340
Products: Weaving; accessories

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Velbert/Rhld., Germany
Bldg. F, Booth 6060
Products: Weaving

EPPINGER K.G., GOTTLIES
Denkendorf Krs. Esslingen, Germany
Bldg. C, Booth 3005
Products: Knitting and embroidering

ERHARDT & LEIMER OHG.
Augsburg, Germany
Bldg. A, Booth 1055
Products: Finishing

EUMAG K.G.
M. Gladbach, Germany
Bldg. A, Booth 1347
Products: Finishing

EXACTA-MASCHINENBAU
Reutlingen, Germany
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Products: Weaving

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Products: Accessories

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Bldg. A, Booth 1090-1113
Products: Finishing

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Bldg. C, Booth 3080
Products: Knitting and embroidering

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Stuttgart, Germany
Bldg. G, Booth 7440
Products: Spinning

GROSSE WEBEREIMASCHINEN GmbH.
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Bldg. F, Booth 6002
Products: Weaving

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Products: Knitting and embroidering

GUSKEN GmbH., JEAN
Dulken/Rhld, Germany
Bldg. F, Booth 6038
Products: Weaving

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Pforzheim, Germany
Bldg. B, Booth 2072
Products: Seaming

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Bldg. F, Booth 6319
Products: Weaving

HAGENUK GmbH.
Keil, Germany
Bldg. G, Booth 7004
Products: Spinning

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Products: Spinning

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Products: Spinning

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Duren/Rhld., Germany
Bldg. A, Booth 1361
Products: Finishing

HEMMER GmbH., L.PH.
Aachen, Germany
Bldg. A, Booth 1353
Products: Finishing

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Aldingen Krs. Tuttlingen, Germany
Bldg. F, Booth 6348
Products: Accessories

HERGERT, HEINZ
Frankfurt/M., Germany
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Products: Finishing

HERGETH K.G.
Duimen/Westf., Germany
Bldg. A, Booth 1355
Products: Spinning, finishing

HEUSCH, SERVERIN
Aachen, Germany
Bldg. A, Booth 1054
Products: Finishing

HILBER & CO., K.G.
Westheim b. Augsburg, Germany
Bldg. C, Booth 3064
Products: Knitting and embroidering

HIRSCHBURGER K.G., EUGEN
Reutlingen, Germany
Bldg. E, Booth 5169
Products: Weaving

INDUSTRIE-COMPANIE KLEINWEWEFERS
Krefeld, Germany
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Products: Seaming

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Bldg. F, Booth 6349
Products: Accessories

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Gescher/Westf., Germany
Bldg. A, Booth 1352
Products: Finishing

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Bldg. G, Booth 7409-12
Products: Accessories

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JURGENS, ALBERT
Emsdetten/Westf., Germany
Bldg. F, Booth 6061
Products: Weaving

KAISER K.G., JOHANN
Bayreuth-St. Georgen, Germany
Bldg. F, Booth 6005
Products: Weaving

KANNEGIESSER & CO.
Vlotho/Weser, Germany
Bldg. B, Booth 2013
Products: Seaming

KEMPTENER MASCHINENFABRIK GmbH.
Kempten/Allgau, Germany
Bldg. C, Booth 3041
Products: Knitting and embroidering

KETTLING & BRAUN
Minden, Germany
Bldg. A, Booth 1363
Products: Finishing

KETTA HAMBURGER KETTELMASCHINEN-FABRIK-
Hamburg, Germany
Bldg. C, Booth 3118
Products: Knitting and embroidering

KIDDE GmbH., WALTER
Bleckede (Elbe), Germany
Bldg. C, Booth 3060-68
Products: Knitting and embroidering

KLEINEWEFERS SOHNE, JOH. (UNIONMATEX)
Krefeld, Germany
Bldg. G, Booth 7009-38
Products: Finishing

KNOTEX-MASCHINENBAU GmbH.
Augsburg, Germany
Bldg. F, Booth 6364
Products: Weaving

KOCHS ADLERNAHMASCHINEN WERKE A.G.
Bielefeld, Germany
Bldg. B, Booth 2020
Products: Seaming

KRANTZ, H. (COMBITEX)
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Bldg. A, Booth 1245-60
Products: Finishing

KRANTZ LUFTTECHNIK, H.
Aachen-Richterich, Germany
Bldg. A, Booth 1213
Products: Accessories

KRANTZ SOHNE, H. (COMBITEX)
Aachen, Germany
Bldg. A, Booth 1245-60
Products: Finishing

KRAUSS & REICHERT
Feilbach b. Stuttgart, Germany
Bldg. B, Booth 2038-58
Products: Seaming

KRENZLER, GUSTAV
Wuppertal-Barmen, Germany
Bldg. C, Booth 3052
Products: Knitting and embroidering; plaiting and lacemaking

LAMMERTZ, LEO
Aachen, Germany
Bldg. B, Booth 2002
Products: Seaming

LEICHTMETALLWERKE WILH. GMOHLING & CO.
Stadeln b. Furth, Germany
Bldg. A, Booth 1391
Products: Accessories

LENTZ, S. (COMBITEX)
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Bldg. A, Booth 1245-60
Products: Weaving

LIBA MASCHINENFABRIK GmbH.
Naila/Oberklingensporn, Germany
Bldg. C, Booth 3051
Products: Knitting and embroidering

LIEBERS & CO.
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Bldg. C, Booth 3004
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Products: Weaving, finishing

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Bldg. A, Booth 1092
Products: Finishing

MAHLO, DR.-ING. HEINZ
Saal/Donau, Germany
Bldg. A, Booth 1059
Products: Weaving, finishing

MAIERMETALLVERARBEITUNG GmbH., C. EUGEN
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Bldg. G, Booth 7303
Products: Spinning

MIKMASCHINENBAUKIEL A. G. (UNIONMATEX)
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Products: Spinning

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Products: Spinning

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Products: Knitting and embroidering

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Products: Finishing

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Products: Finishing

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Bldg. F, Booth 6357
Products: Weaving

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Products: Spinning

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Products: Weaving

MASCHINENFABRIK ZELL (COMBITEX)
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Products: Weaving, knitting and embroidering

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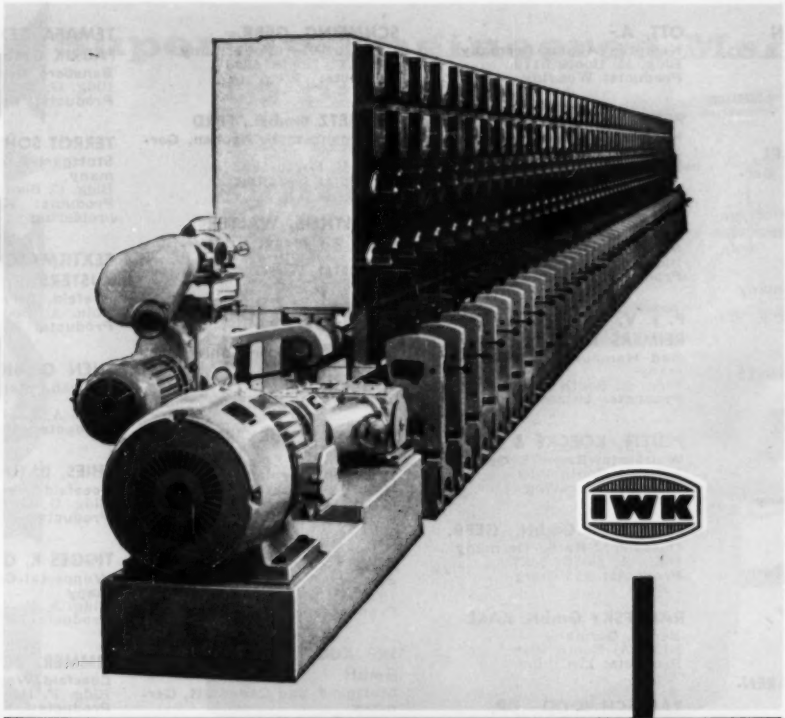
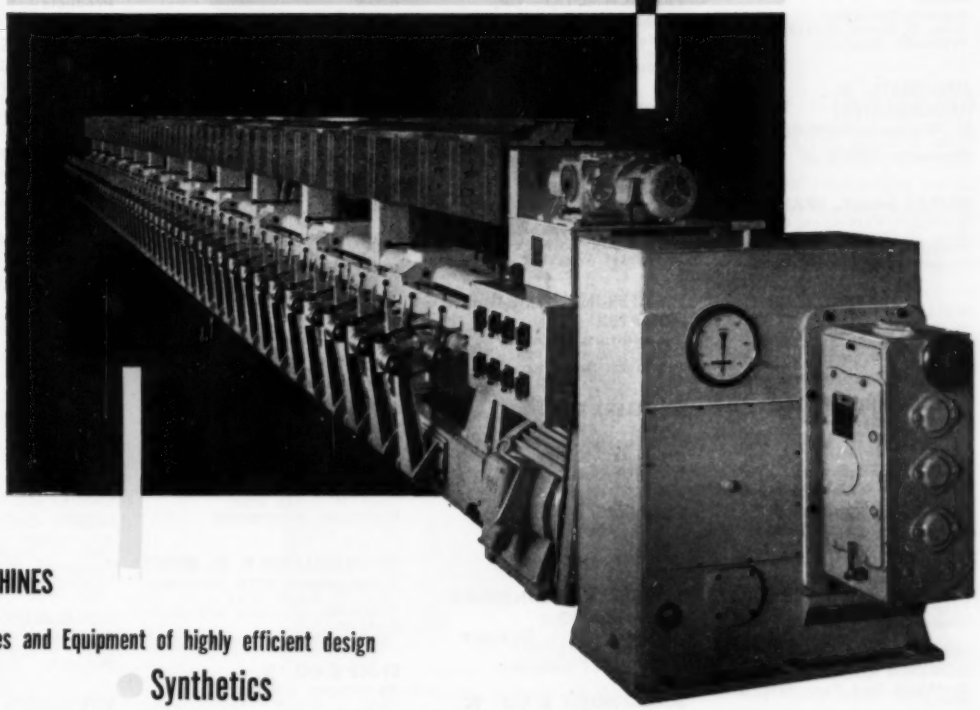
Bldg. A, Booth 1112
Products: Finishing





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Products: Spinning

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Products: Finishing

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Products: Seaming

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Products: Spinning

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Products: Accessories

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Products: Weaving

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Bldg. A, Booth 1057
Products: Finishing

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Berlin, Germany
Bldg. A, Booth 1349
Products: Finishing

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Krefeld, Germany
Bldg. A, Booth 1245-60
Products: Finishing

REINSHAGEN, P. F.
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Products: Plaiting and lacemaking

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Bldg. E, Booth 5152
Products: Weaving

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Schweinfurt, Germany
Bldg. G, Booth 7015
Products: Spinning

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Eislingen/Fils, Germany
Bldg. C, Booth 3113
Products: Knitting and embroidering

SCHIFFERS, WILHELM
Aachen, Germany
Bldg. A, Booth 1001
Products: Finishing

SCHILDE MASCHINENBAU-A. G., BENNO
Bad Hersfeld/H., Germany
Bldg. A, Booth 1356
Products: Finishing

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M. Gladbach, Germany
Bldg. G, Booth 7009-38
Products: Weaving

SCHLENTER & CIE. J.
Aachen, Germany
Bldg. A, Booth 1002
Products: Finishing

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Schwabach/Bayern, Germany
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Products: Spinning

SCHMEING, GEBR.
Weseke/Westf., Germany
Bldg. F, Booth 6328
Products: Weaving

SCHMETZ GmbH., FERD
Herzogenrath b. Aachen, Germany
Bldg. B, Booth 2027
Products: Seaming

SCHULTHEIS, WALTER
Fulda, Germany
Bldg. F, Booth 6315
Products: Weaving

SEELEMANN & SOHNE, G. ANTON
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Bldg. G, Booth 7046
Products: Spinning

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Erlangen, Germany
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Products: Accessories

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Products: Seaming

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Products: Spinning

SOHLER GmbH., HUBERT
Wangen/Allgau, Germany
Bldg. A, Booth 1217
Products: Accessories

SPALECK GmbH., MAX
Bocholt/Westf., Germany
Bldg. F, Booth 6318
Products: Weaving

SPINNBAU GmbH.
Bremen-Farge, Germany
Bldg. G, Booth 7051-60
Products: Spinning

SPINTEX SPINNEREIMA-SCHINENBAU
Murrhardt/Wurtt., Germany
Bldg. G, Booth 7053
Products: Spinning

STEMMANN OHG. AUGUST
Schuttorf/Niedersachsen, Germany
Bldg. F, Booth 6356
Products: Accessories

STOCKERMANN K. G., ERNST
Treuchtlingen/Mfre., Germany
Bldg. C, Booth 3037
Products: Plaiting and lacemaking

STOLL & CO., H.
Reutlingen, Germany
Bldg. C, Booth 3081
Products: Knitting and embroidering

STROBEL & SOHNE, J.
Munchen, Germany
Bldg. B, Booth 2044
Products: Seaming

SUCKER, GEBR. (UNIONMATEX)
M. Gladbach, Germany
Bldg. G, Booth 7009-38
Products: Weaving

TEMAFA TEXTILMASCHINEN-FABRIK GmbH.
Bensberg Bez. Koln, Germany
Bldg. G, Booth 7047
Products: Spinning

TERROT SOHNE, C.
Stuttgart-Bad Cannstatt, Germany
Bldg. C, Booth 3030
Products: Knitting and embroidering

TEXTILMASCHINEN EDUARD KUSTERS
Krefeld, Germany
Bldg. A, Booth 1202
Products: Finishing

THEN GmbH., RUDOLPH
Schwab. Hall-Hessental, Germany
Bldg. A, Booth 1062-87
Products: Finishing

THIES, B. (UNIONMATEX)
Coesfeld/Westf., Germany
Bldg. G, Booth 7009-38
Products: Finishing

TIGGES K. G., LEBRECHT
Wuppertal-Cronenberg, Germany
Bldg. A, Booth 1003
Products: Finishing

TIMMER, JOSEF
Coesfeld/Westf., Germany
Bldg. F, Booth 6322
Products: Weaving, finishing

TROCKENTECHNIK KURT BRUCKNER K. G.
Stuttgart-Leonberg, Germany
Bldg. A, Booth 1359
Products: Finishing

TRUTZSCHLER & CO.
Rheydt-Odenkirchen, Germany
Bldg. G, Booth 7043-66
Products: Spinning

UNGRICHT, A. & E.
M. Gladbach, Germany
Bldg. A, Booth 1346
Products: Finishing

UNIONMATEX GmbH.
Frankfurt/M., Germany
Bldg. A, Booth 7009-38

UNION SPECIALMASCHINEN-FABRIK GmbH.
Stuttgart, Germany
Bldg. B, Booth 2003
Products: Seaming

UNIVERSAL MASCHINEN-FABRIK GmbH.
Westhausen/Wurtt., Germany
Bldg. C, Booth 3012-3023
Products: Knitting and embroidering

VITS-ELEKTRO GmbH.
Dusseldorf, Germany
Bldg. A, Booth 1005
Products: Finishing

VOLKMANN & CO.
Krefeld, Germany
Bldg. G, Booth 7006
Products: Spinning

WEBSTUHLBAU FRITZ ROSCHER OHG.
Bamberg, Germany
Bldg. F, Booth 6062
Products: Weaving

WEBSTUHLFABRIK GUNNE
Gunne Krs. Soest, Germany
Bldg. F, Booth 6004
Products: Weaving

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NEW COMPLETE MILL EQUIPMENT featuring --

NEW HIGH SPEED (PERL) COMB for worsted & synthetic fibres 1) 20% more production than any other French-type comb. 2) Runs at 175 nips per minute. 3) Suction System keeps work clean. 4) Extra-large can delivery. 5) Minimum floor space requirements. Agents for the PERL Comb in the U. S. A. & Canada: Atkinson, Haserick & Co., Framingham, Mass.

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MILAN EXHIBITION
Section **G**—Booth **7097-8**

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NEW HIGH SPEED (ER) DRAWING FRAME for cotton & synthetics 1) Two-head machine gives higher efficiency, easier settings and remarkable accuracy. 2) Positive guiding of sliver prevents any false draft. 3) Large feeding can means less piecings and handling. 4) Patented drafting systems gives speeds of 120 to 130 meters (130 to 140 yds.) per min. with no lapping, perfect regularity of sliver. Adjustable high-pressure system for all lengths of fibres up to 80mm (3⅛"). 5) Suction System gives cleaner operation. 6) All parts are easily accessible. Descriptive bulletin will be sent on request. In the U. S. A., write to: S. A. C. M., 3 Channing Place, Cambridge, Mass.

Société Alsacienne de Constructions Mécaniques
Mulhouse, France

WEITMANN & KONRAD
Echterdingen, Germany

WIRKMASCHINEN-FABRIK WILHELM BARFUSS
Wilhelmshaven, Germany
Bldg. C, Booth 3096
Products: Knitting and embroidering

WOLTERS GmbH. & CO., PETER
Mettmann/Rhld., Germany
Bldg. G, Booth 7343
Products: Spinning

WURTTEMBERGISCHE SPINDELFABRIK GmbH.
Sussen, Germany
Bldg. G, Booth 7307
Products: Spinning

ZARGES-LEICHTMETALLBAU K. G.
Weilheim/Obb., Germany
Bldg. A, Booth 1404-8
Products: Accessories

ZINSER TEXTILMASCHINEN GmbH.
Ebersbach/Fils, Germany
Bldg. G, Booth 7044-65
Products: Spinning

ITALY

A e BI
Bologna, Italy
Products: Finishing

AEROTECHNICA MARELLI
Milan, Italy
Products: Finishing

AGO MAGICO di POLVERELLI N & SANTARINI
Rimini, Italy

"A.L.E.A." LOMBARDA ESSICCATOI AUTOM.
Milan, Italy
Products: Finishing

AQUILA-SANTAGOSTINO
Milan, Italy
Products: Knitting

ARIOLI & C.
Saronno (Varese), Italy
Products: Finishing

AROSIO ENRICO & FIGLI
Milan, Italy
Products: Spinning

ATENA
Milan, Italy
Products: Weaving

"A.T.I." TERMOTECNICA IT.
Milan, Italy
Products: Finishing

BECHERINI FRANCESCO
Prato, Italy
Products: Finishing

BELLINI LORIS & C.
Bollate (Milan), Italy
Products: Finishing

BERTONI DANTE
Gallarate, Italy
Products: Spinning

BETTINI FRATELLI
Lecco, Italy
Products: Accessories

BETTONI FRATELLI
Bergamo, Italy
Products: Carding

BIGAGLI S. & C.
Prato, Italy
Products: Spinning; finishing

BOLTRI LODOVICO DI U. GANNA
Milan, Italy
Products: Winding

BONICALZI FRATELLI & C.
Gallarate, Italy
Products: Spinning; weaving

BONINO GIOVANNI
Gaglianico (Vercelli), Italy
Products: Spinning

BRAGONZI
Milan, Italy
Products: Accessories

BRANCA ALBERTO
Milan, Italy
Products: Accessories

BRUGGER OFF. MECC.
Como, Italy
Products: Winding

CALDERARA ING. VITORRIO
Milan, Italy
Products: Accessories

CAMINADA A. & FIGLIO
Milan, Italy
Products: Accessories

CARDPEN SOC. IT.
Bergamo, Italy
Products: Weaving

CARNITI A. & C.
Oggiono (Como), Italy
Products: Spinning

CAZZANIGA DIONIGI
Monguzzo (Como), Italy
Products: Weaving

"C.G.E." COMP. GENERALE ELETTRICITA'
Milan, Italy
Products: Accessories

CHIORINO LORENZO & FIGLI CONCERIA
Biella, Italy
Products: Spinning; weaving

CIAPPARELLI ENRICO
Legnano, Italy
Products: Winding

CLERICI ALFREDO
Milan, Italy
Products: Finishing

"C.M.T." COSTR. MACC. TESSILI
Cologne Bresciano, Italy
Products: Spinning

COGNE SOC. NAZIONALE
Torino, Italy
Products: Spinning; weaving

COLLI FRATELLI OFF. MECC.
Civalenga, Italy
Products: Lace machines

"COMAT"
Prato, Italy
Products: Warping; winding

COMERIO ERCOLE
Busto Arsizio, Italy
Products: Finishing

COMERIO RODOLFO
Busto Arsizio, Italy
Products: Finishing

COMI. CONSTRUZIONI MECCANICHE
Milan, Italy
Products: Finishing

COMUT
Milan, Italy
Products: Knitting

"CONDOR" FABBR. AGHI
Milan, Italy
Products: Knitting

COPPO ALESSANDRO
Torino, Italy
Products: Knitting

CORGHI ELETTROMECCANICA
Milan, Italy
Products: Winding

CRAVELLO R. & FRATELLO
Biella, Italy
Products: Warping

CROSTA MARIO
Busto Arsizio, Italy
Products: Preparatory; finishing; accessories

DAVINI & PLUDA
Brescia, Italy
Products: Knitting

DE ANGELI
Monza, Italy
Products: Braiding; spooling; winding; weaving

DE BERNARDI ANDREA
Busto Arsizio, Italy
Products: Winding

DE BERNARDI FRATELLI
Bienate (Milan), Italy
Products: Winding; finishing

DELL'ORTO CHIEREGATTI
Milan, Italy
Products: Laundry machinery

DICK FEDERICO
Monza, Italy
Products: Braiding; winding

"EDERA"
Cologne Bresciano, Italy
Products: Accessories

"ELETTROTEX" DI CONTI
Legnano, Italy
Products: Winding; finishing

ELIA GIUSEPPE & C.
Chieri (Torino), Italy
Products: Twisting; weaving

"E.M.A." ELETTRO MECCANICA
Novara, Italy
Products: Preparatory

"EVEREST" L. CALCATERRA
Milan, Italy
Products: Laundry machinery

"EXACTA"
Brignano d'Adda (Bergamo), Italy
Products: Accessories

FABBRICHE ELETTROTECHNICHE RIUNITE
Milan, Italy
Products: Accessories

FABBRICHE FORMENTI
Milan, Italy
Products: Accessories

"FAMATEX"
Garbagnate Milanese, Italy
Products: Spinning

FENWICH
Milan, Italy
Products: Accessories

"F.I.A.M." DI GIUSSANI
Milan, Italy
Products: Seaming

"FILDIS" DI FOA'
Milan, Italy
Products: Accessories

FIORE ANDREA
Torino, Italy
Products: Winding

FONDERIE OFFICINE RIUNITE
Biella, Italy
Products: Preparatory

FONTANA A. OFFICINE
Legnano, Italy
Products: Weaving

GALDABINI CESARE
Gallarate, Italy
Products: Accessories

GALILEO OFFICINE
Firenze, Italy
Products: Cards; looms

GALILEO OFFICINE
La Spezia, Italy
Products: Accessories

GARDELLA ADRIANO & FRATELLO
Genova, Italy
Products: Preparatory

GAUDINO OFFICINE
Cossato (Biella), Italy
Products: Spinning

GE' & BACCI
Novara, Italy
Products: Weaving

GELIBELLI-STABILINI
Busto Arsizio, Italy
Products: Weaving

GIACHINO G.G. & C.
Coggiola Biellese, Italy
Products: Finishing

GIANI CARLO
Busto Arsizio, Italy
Products: Warping; weaving

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CIRCLE 111 ON READER SERVICE CARD 111

GIUDICI DAVIDE & FIGLI
Sala al Barro (Como), Italy
Products: Twisting

"GIUKAR"
Milan, Italy
Products: Winding; knitting

GRASSI GIUSEPPE & C.
Milan, Italy
Products: Accessories

GUALCHIERANI FRATELLI
Prato, Italy
Products: Accessories

GUTRIS
Milan, Italy
Products: Accessories

HACHEN FEDERICO & FIGLI
Milan, Italy
Products: Accessories

"I. BER" DI AZZOLARI
Brignano d'Adda (Bergamo), Italy
Products: Knitting

"I.C.A.T." DI TESTORI
Meina (Novara), Italy
Products: Accessories

"I.L.M.A." LAV. METALLI ANTIACIDI
Schio, Italy
Products: Finishing

"I.M.E.C." ELETTRO CERAMICA
Milan, Italy
Products: Accessories

"INCAB" DI MONZINI
Milan, Italy
Products: Accessories

"IRMAC"
Urago Mella (Brescia), Italy
Products: Knitting

"I.S.M." SEAMLESS MACHINERY
Milan, Italy
Products: Knitting

ISOLA
Milan, Italy
Products: Accessories

"ISOTEX"
Vicenza, Italy
Products: Finishing

ITALVOX
Milan, Italy
Products: Accessories

JAMETTI A. & C.
Somma Lombardo (Varese), Italy
Products: Accessories

JUCKER
Milan, Italy
Products: Finishing

KENYON ITALIANA
Biella-Chiavazza, Italy
Products: Accessories

LA FIBRA VULCANIZZATA E CARTIERE PREALP.
Milan, Italy
Products: Accessories

LAMPERTI OFFICINA MECCANICA
Busto Arsizio, Italy
Products: Finishing

LATTUADA R. & C.
Milan, Italy
Products: Accessories

LENZ ALBERTO
Milan, Italy
Products: Accessories

LEZZENI MARIO
Como, Italy
Products: Winding; doubling; twisting

LONATI & LODOLO
Brescia, Italy
Products: Knitting

LUCIANI ORESTE
Parma, Italy
Products: Accessories

MANIFATTURA CINCLA
Milan, Italy
Products: Accessories

MANIFATTURA DI DAVERIO DE SPA & FIGLI
Daverio (Varese), Italy
Products: Accessories

MANIFATTURA ITALIANA DI SCARDASSI
Biella, Italy
Products: Accessories

MARANGONI & C.
Milan, Italy
Products: Accessories

MARCHISIO GIOVANNI & C.
Torino, Italy
Products: Knitting

MARELLI ERCOLE & C.
Milan, Italy
Products: Accessories

MARZOLI FRATELLI & C.
Palazzolo s.Oglio (Brescia), Italy
Products: Spinning

MARZORATI TECNICA IND.
Milan, Italy
Products: Accessories

"MATEX" OFF. MECC.
Brescia, Italy
Products: Knitting

MAZZA GIANNI
Legnano, Italy
Products: Accessories

MECCANICA ALTO MILANESE
Busto Arsizio, Italy
Products: Weaving

MECCANIC AUTOMATION TEXIL
Manerbio (Brescia), Italy
Products: Finishing

MECCANOTESSILE—FONTANA & LANFRANCHI
Como, Italy
Products: Finishing

MENTASTI ANTONIO
Milan, Italy
Products: Accessories

METALLURGICA TESSILE
Milan, Italy
Products: Spinning

METALMECCANICA
Busto Arsizio, Italy
Products: Finishing

MEZZERA COSTR. MECC.
Milan, Italy
Products: Finishing

"MIATEX" DI CALLIGARICH
Milan, Italy
Products: Accessories

MICRO ITALIANA
Milan, Italy
Products: Accessories

MILANI MANSUETO
Milan, Italy
Products: Accessories

"M.I.L." MACCH. IMP. LAVAGGIO
Milan, Italy
Products: Accessories

MINNETTI OFFICINE
Pieve a Nievole (Pistoia), Italy
Products: Finishing

"MISAL"—LETO
Milan, Italy
Products: Accessories

M. L. WEBER
Brescia, Italy
Products: Knitting; winding

MONTI OFFICINE
Thiene (Vicenza), Italy
Products: Accessories

MORETTA OFF. MECC.
Varese, Italy
Products: Knitting

MUZZI PIETRO
Busto Arsizio, Italy
Products: Winding; accessories

NEBIOLO SOC.
Torino, Italy
Products: Weaving

NECCHI
Pavia, Italy
Products: Seaming

NEGRI CAV. C. & C.
Abbiategrasso, Italy
Products: Finishing

NESI & PUGI
Prato, Italy
Products: Seaming

NOSEDA SALVATORE
Como, Italy
Products: Finishing

NUOVA SAN GIORGIA (FINMECCANICA)
Genova-Sestri, Italy
Products: Spinning

"O.B.E.M." OFF. BIELLESE ELETTROMECC.
Biella-Chiavazza, Italy
Products: Finishing

"O.C.T.I.R."
Biella, Italy
Products: Spinning; finishing

OFFICINE MONCENISIO
Torino, Italy
Products: Knitting

OLIVETTI OFFICINA MECCANICA
San Bernardo d'Ivrea, Italy
Products: Accessories

"O.L.M.I." LAV. METALLI INOSSIDABILI
Milan, Italy
Products: Finishing

"O.M.A.M." DI MELLINI
Milan, Italy
Products: Knitting

"O.M.C."
Milan, Italy
Products: Accessories

"O.M.C.S.A" CIGARDI
Milan, Italy
Products: Preparatory

"OMEZ" DI ZANIBONI
Bergamo, Italy
Products: Finishing

"O.M.I.T.A."
Albate (Como), Italy
Products: Weaving

"O M M" DI MENEGATTO
Monza, Italy
Products: Winding

"O.M.P." DI BODEGA
Biella, Italy
Products: Doubling; winding

ORMIC
Milan, Italy
Products: Accessories

"O.R.M.T." DI GRAMONI
Novara, Italy
Products: Preparatory

OTO MELARA (FINMECCANICA)
La Spezia, Italy
Products: Preparatory

PAGNINI IVO
Lastra a Signa (Fienze), Italy
Products: Accessories

PELLIZZARI A. & FIGLI
Arzignano (Vicenza), Italy
Products: Accessories

PELUSO ING. G. FO
Milan, Italy
Products: Spinning

PETAZZI ERCOLE
Cassano Magnago (Varese), Italy
Products: Weaving

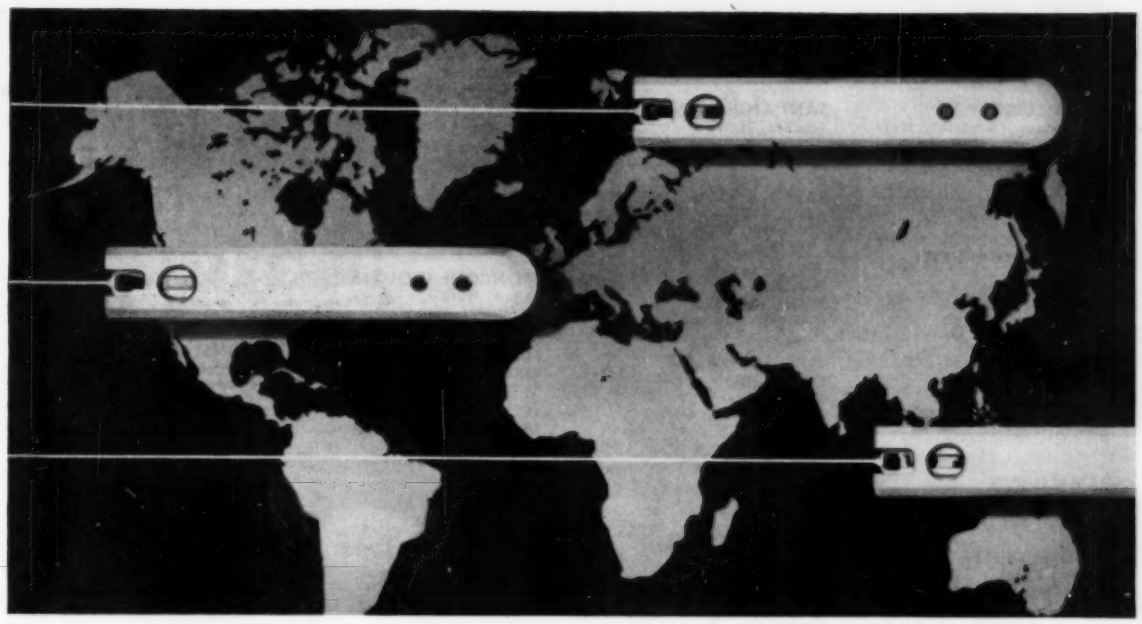
PIRELLI
Milan, Italy
Products: Accessories

PISTOIESI OFF. MECC. FERR. (FINMECCANICA)
Pistoia, Italy
Products: Preparatory; weaving

POGLIANO P.
Torino, Italy
Products: Accessories

PONTECORVO GIACOMO
Milan, Italy
Products: Accessories

POZZI LEOPOLDO
Agliate Brianza (Milan), Italy
Products: Finishing



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for cotton, wool and synthetic fibres

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CIRCLE 113 ON READER SERVICE CARD 113

POZZI LUIGI
Concorezzo (Milan), Italy
Products: Finishing

PRESTI LUIGI
Castegnato (Brescia), Italy
Products: Knitting

PROTTI & C.
Milan, Italy
Products: Knitting

QUERCI & GIACHETTI
Prato, Italy
Products: Spinning

RADAELLI ING. G.
Milan, Italy
Products: Accessories

RAIMONDI LUIGI
Legnano, Italy
Products: Finishing

RAMALLUMIN
Legnano, Italy
Products: Weaving

RATTI MICHELE
Luino (Varese), Italy
Products: Winding; doubling; twisting

REDAELLI LUIGI
Milan, Italy

REGGIANI MECCANOTEX
Bergamo, Italy
Products: Finishing

REGIS FLAMINIO
Vercelli, Italy
Products: Weaving

RIMOLDI VIRGINIO & C.
Milan, Italy
Products: Seaming

ROLANDO ORESTE
Chiavazza-Biella, Italy
Products: Accessories

ROMAGNOLI GIUSEPPE
Bologna, Italy
Products: Finishing

ROSSO GIUSEPPE
Torino, Italy
Products: Knitting

ROSTONI COSTR. MECC.
Busto Arsizio, Italy
Products: Warping

RUMI FOND. OFF.
Bergamo, Italy
Products: Preparatory; weaving

SACCARDO-INDUSTRIE
Schio, Italy
Products: Accessories

"S.A.C.F.E.M."
Arezzo, Italy
Products: Preparatory; warping

S.A.F.O.G. (FINMECCANICA)
Gorizia, Italy
Products: Weaving

SALVATICO G. & C.
Como, Italy
Products: Warping

"S A M P R E"
Milan, Italy
Products: Accessories

SANT'ANDREA NOVARA
Novara, Italy
Products: Preparatory; weaving

SAVIO & FIGLI OFFICINE
Pordenone (Udine), Italy
Products: Winding; doubling; twisting

SCAGLIA M.
Milan, Italy
Products: Accessories

SERRALUNGA G.P. CONCERIA
Biella, Italy
Products: Accessories

SIAI-LERICI
Cormano (Milan), Italy
Products: Finishing

"S.I.A.T.A." ACC. TESS.
Carugo (Como), Italy
Products: Accessories

SIBILIA A. OFFICINE
Castelletto Ticino (Novara), Italy
Products: Accessories

"S I C A T" COSTR. AEROTERMICHE
Milan, Italy
Products: Finishing

SIMBOLI ING. GIOVANNI
Milan, Italy
Products: Accessories

SINGER COMP. IT.
Milan, Italy
Products: Seaming

SIRONI ANGELO & FIGLI S.A.
Busto Arsizio, Italy
Products: Accessories

"S.I.T.A.M." TELAI AUT.
Pavia, Italy
Products: Weaving

"S.M.I.T."
Milan, Italy
Products: Finishing

"SOLIS" FABBR. PLATINE
Firenze, Italy
Products: Accessories

S.O.M. ANDREANI & C.
Bergamo, Italy
Products: Preparatory

SPEROTTO GIUSEPPE
Schio, Italy
Products: Finishing

SPRIANO S.P.A.
Milan, Italy

STUCCHI CESIRO
Milan, Italy
Products: Preparatory

"TEMATEX" DI REYNAUD
Milan, Italy
Products: Preparatory

TERMORID
Milan, Italy
Products: Finishing

TESSILMECCANICA LOMBARDA DI BARBIER
Milan, Italy
Products: Winding

TEXNOVO
Milan, Italy
Products: Weaving

TOZZINI & NASCIMBENE
Milan, Italy
Products: Accessories

TRONCONI GIOVANNI
Milan, Italy
Products: Weaving

TUBETTI OFF. IT.
Milan, Italy
Products: Accessories

VIGANO MACCHINE
Varese, Italy
Products: Knitting

VISNOVA
Milan, Italy
Products: Seaming

VOUK E. & FIGLIO
Gorizia, Italy
Products: Preparatory

ZANON ETTORE
Schio, Italy
Products: Finishing

ZAZIO PAOLO & C.
Brescia, Italy
Products: Knitting

ZERBO MACC. TESSILI
Cossato (Biella), Italy

ZORINI OMODEO FRATELLI
Cilavegna (Pavia), Italy
Products: Lace machines

NETHERLANDS

AGO N. V.
Ter-Apel, Netherlands
Products: Accessories; shuttle grinder

N. V. BRONSWERK

BROUWER & CO.
Hengelo-O, Netherlands
Products: Spinning-tube ring-reinforcing machine

CEZOMA
Uden, Netherlands
Products: Winders

LANDE N. V., van der
Veghel, Netherlands
Products: Card-ejector system

"QUALITEX" N. V.
Enschede, Netherlands
Products: Electronic thread cleaner for winders; loom yarn-break counters

STORK & CO.
Amsterdam, Netherlands
Products: Printing and finishing machinery

TATTERSALL & HOLDSWORTH
Enschede, Netherlands
Products: Drum dryer; lab jig

TEXTIEL MACHINES READING
Almelo, Netherlands
Products: Circular knitting machines

TIMMERIJE, N. V.
Neede, Netherlands
Products: Centrifuge

SPAIN

CONSTANT CARD
Barcelona, Spain
Products: Preparatory

MAQUINA TEXTIL del NORTE de ESPANA S.A.
Pamplona, Spain
Products: Looms

MOTA CASTELLA' Y CIA.
Sabadell, Spain
Products: Preparatory

SERRA
Barcelona, Spain
Products: Cards, drawing, spinning

SWEDEN

MAXBO
Norrkoping, Sweden

SVEGEA
Ljungskile, Sweden

TEXO
Almhult, Sweden

SWITZERLAND

ARM (WALTER)
Biglen/BE, Switzerland
Bldg. F, Booth 6305
Products: Weaving accessories and supplies

BAER (HENRY) & CO. A. G.
Zurich, Switzerland
Bldg. G, Booth 7324
Products: Measuring and testing

BAR-LUCHSINGER (M.)
Schwanden/GL, Switzerland
Bldg. F, Booth 6302
Products: Weaving

BENNINGER A.G.
Uzwil/SG, Switzerland
Bldg. A, E, Booths 1023, 5001
Products: Warping and finishing; accessories and supplies

BUSER FRITZ S. A.
Wiler b/Utzenstorf, Switzerland
Bldg. A, Booth 1074
Products: Finishing

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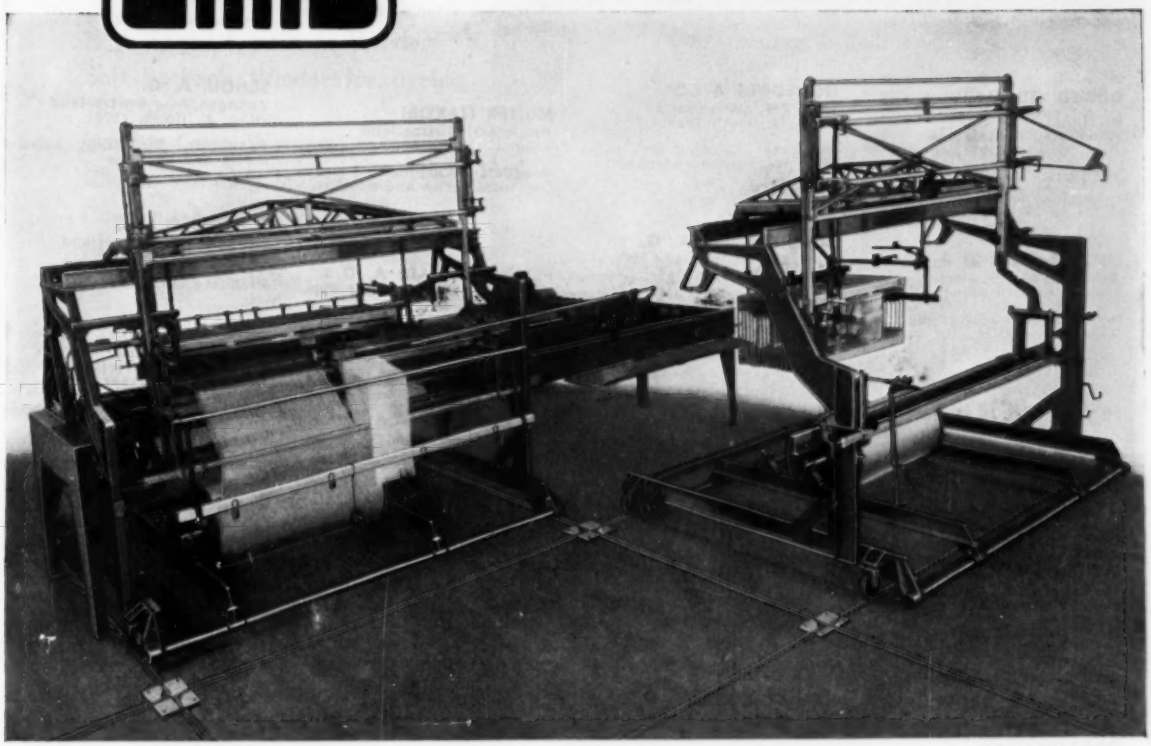
STAND 5154



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AMERICAN TEXTILE MACHINERY EXHIBITION
ATLANTIC CITY, N. J.
MAY 23-27, 1960

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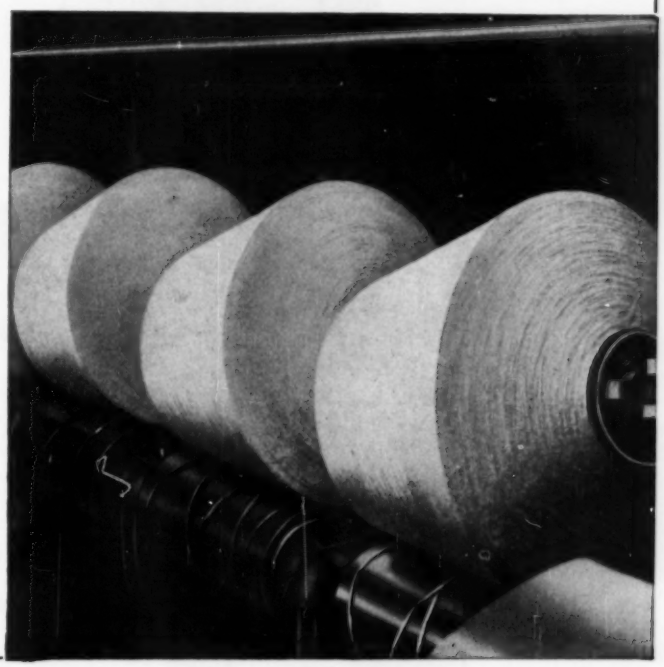

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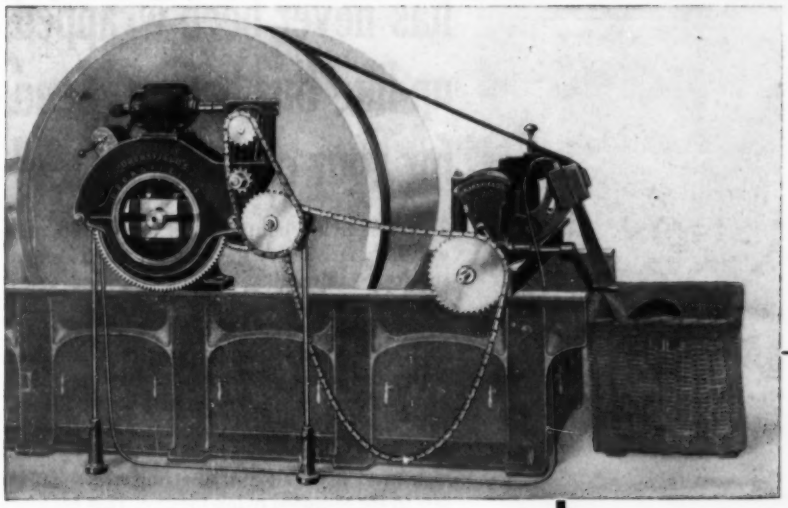

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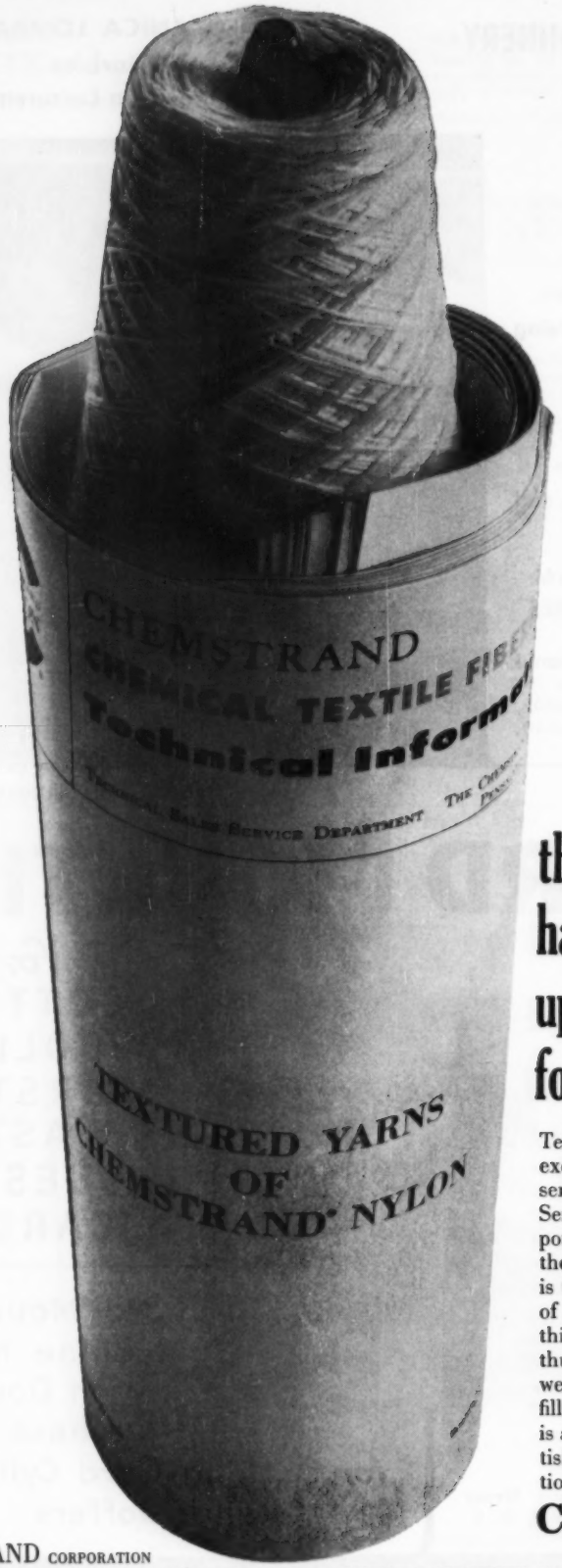

the textured yarn story has never been wrapped up like this before. Send for your copy...it's free!

Textured nylon continues to open fresh and exciting markets for the textile industry. As a service to the industry, The Technical Sales Service Department of The Chemstrand Corporation has prepared this 33-page booklet on the entire story of textured nylon yarns. This is the most comprehensive, current treatment of the subject available. Industry reaction to this highly informative booklet has been enthusiastic. Technical people, especially, have welcomed it because of the important gap it fills in the textured nylon picture. This booklet is available free. Simply write to Nylon Advertising Department, The Chemstrand Corporation, 350 Fifth Avenue, New York 1, N. Y.

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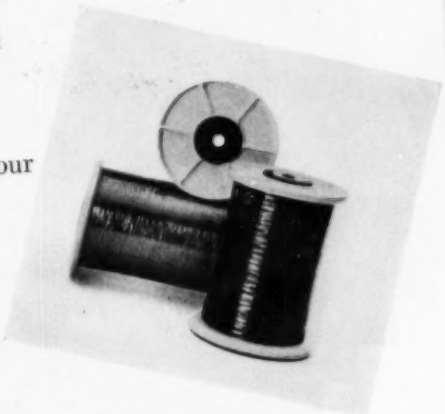
News about LUREX®

The plastic disposable spool

Made of high impact white plastic this new spool provides a more efficient mill operation, saves money and yields high quality.

The reasons:

- it protects against shipping damage.
- its high impact plastic prevents flanges from cracking off.
- it is put up with the best wind possible and preserves it by providing freer ends.



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Lurex, non-tarnishing metallic yarn made only by the Textile Fibers Department

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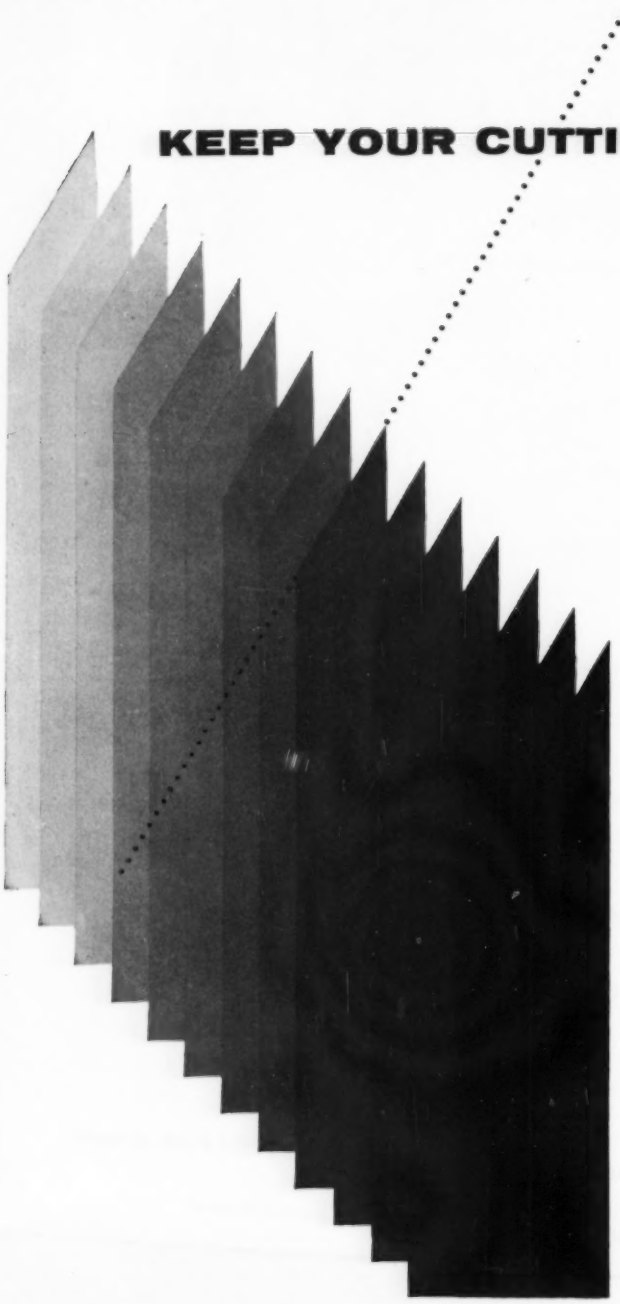

For maximum success with the new textured filament yarns, certain basic facts should be kept in mind:

FACT: Textured Filament Yarns and Spun Yarns are not the same.

EXAMPLE: In tufting textured filament yarns, knife edges must be kept sharp to avoid cutting streaks.

WHAT TO DO: Sharpen knives frequently. Use a clamp on your emery wheel to provide a uniform knife angle and keener cutting surfaces. This is one of the simple steps that can help you get best results with Textured Caprolan*. Our technical service, end-use development, and fiber application laboratory staffs will be glad to assist you in adapting Textured Caprolan to your product lines. Call us any time.

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261 Madison Avenue, New York 16, N. Y.

**Trademark—Allied Chemical's polyamide fiber*

Pepperell's Additions

Pepperell Mfg. Co. has added a new hand-screened panel-print blanket to its Upstairs Crib line. It is completely washable.

The company had also added five new fitted sheet sizes and five new patterns to its sheet line. Three of the patterns have rose motifs. One pattern features a design of clover blossoms, and another features vertical stripes.

A new addition to the company's bordered-sheet line is the Colonial Rose design.

Oriental Cotton Prints

Cone Mills is featuring new Oriental interpretations in its cotton prints for sport shirts, cabana sets, and boys' wear.

One fabric, a no-iron oxford shirting, has a pagoda motif in a neat foulard-type arrangement. Boldly colored Oriental prints have been used in cabana sets. A Japanese signet motif appears on a reed-textured ground.

Reevon Webbing

Flat weaves of light-stable Reevon polypropylene yarn will be marketed by several webbing manufacturers for use in outdoor furniture.

Reevon yarns are offered in a wide range of colors, are colorfast, and do not deteriorate or fade even after prolonged exposure to weather.

Preshrunk Rayon Labels

Label Weave Div., Recony Corp., has developed a new process called DD-3 for shrinkage control of woven rayon labels so that the labels can be safely used on wash-and-wear, drip-dry apparel. The labels are said to shrink less than 2%.

The labels are wrinkle-resistant, nonchlorine-retentive, and fast drying and will not cause garments to pucker.

Koroseal Conveyor Belt

Martha Mills has woven a code 680-49-½ all-cotton belt duck that was used in a Koroseal conveyor belt manufactured by B. F. Goodrich Industrial Products Co. This conveyor belt is being used in a pioneer installation at Ford Motor Co.'s No. 1 engine plant at Cleveland, Ohio, on 11 lines to convey motor parts.

Belts previously used on the piston-conveyor system lasted from two to six months and failed under the shredding action of the sharp-edged castings. The Koroseal belt was installed more than a year ago at the Ford plant and looks good for another year of service.

USDA Seeks Better Cottons

The USDA has contracted with Lowell Technological Institute Research Foundation to find better cotton fabrics for special uses such as blankets and certain types of outer garments.

Experimental fabrics of selected structures from yarns spun on the woolen system from untreated cotton, resin-treated cotton, and blends of untreated and resin-treated cotton will be produced.

Experiments will also be conducted to improve dimensional stability, resistance to wrinkling, and warmth properties of such fabrics through application of selected resins, mechanical treatments, and curing.

New Fall Sock Line

Jerks Socks-Wovenright, a division of Burlington Hosiery Co., highlights burnished and heather tones in its fall and winter lines of nylon, Orlon, Dacron, and wool-blended men's socks.

About 55% of the company's entire line of 176 styles is offered in these new shades. The burnished tones include tempered brass, hammered bronze, fired brick, metallic blue, antique pewter, and burnished brown.

The styles are in conservative patterns, and emphasis is also placed on long hose and sized hose.

New merchandising ideas are also being introduced. Assortments of several color combinations are packaged in one box instead of the traditional one color per box.

Gould Introduces Tycora Line

Sidney Gould Ltd. is showing a bulky cable-stitched broque cardigan of Tycora in its fall line. This is the company's first Tycora collection.

The cropped sweater with three-quarter sleeves has dimensional-surface interest created by the use of an all-over cable-stitch detail. It has wide-ribbed banding at the collarless neckline and front closing.

Another style in the Tycora collection is a ribbed bulky cardigan with cable border on collar and front closing.

Home-Furnishings Display

Fuller Fabrics, a division of J. P. Stevens & Co., Inc., in collaboration with Eastman Chemical Products, Inc., is displaying home-decorating fabrics of Eastman fibers at the Design Center for Interiors, New York City. Estron acetate, Chromspun acetate, and Verel are the fibers used.

Piece goods, draperies, bedroom ensembles, upholstery fabrics, furniture, and carpeting are shown.

The display highlights a new interpretation of room-design coordination, matching wall accessories and draperies. Bordered scrolls are printed with a scenic abstract or figure motif. This same oveprinted pattern is repeated on the drapery fabrics. Fuller Fabrics

merchandises both the decorative prints and the scrolls.

The color scheme of the overall display area and decorative accents combines brown with turquoise tones, and Bristol blue with white tones.

Wamsutta's New Blends

Wamsutta Mills, Inc., has introduced two new blended fabrics for men's and boys' wear for next spring.

One fabric, called Excellere, contains 50% Vycron and 50% combed cotton. It is treated with Suttamatic automatic finish for wash-and-wear. It is available in four textures and in a wide range of colors.

The other fabric, Veriset, is a blend of combed cotton and Verel. It is also treated with the Suttamatic finish and is available in 10 new surfaces and 20 shades.

Four-Fiber-Blend Gabardine

Mount Vernon Mills has developed a new long-wear, easy-care uniform fabric that has been treated with Scotchgard stain repeller. It is a blend of four fibers.

The blend consists of the component fibers in the following proportions: Dacron, 47.5%; Orlon 28.6%; wool, 19.0%; and other fibers, 4.9%.

Esquire's Fall Collection

Esquire Socks is featuring 50-50 Orlon-wool socks in the $1.50 to $2.00 range. The range will include argyles, a clover-leaf allover pattern, plaids, and Swiss embroidered motifs on ribs.

The high-fashioned Continental theme is highlighted in the embroidered-lisle range retailing at $1.00 to $1.50. An imported Spanish links-and-links design with a hand-embroidered clock is a feature. Other styles include flat knits, cable links, basket weaves, and narrow ribs, all with two-color Swiss-embroidered motifs.

The company is also expanding its Governor one-size nylon-staple program to include two new items: a cotton and nylon regular-length sock and an all-nylon over-the-calf length.

The crew-sock program will introduce a Corval-and-Orlon heavier-weight sock to retail at $1.00 and a new comfort-top item in a cushion sole with school and college stripings.

All collections feature the new subtle deep tones. Black is coordinated with olive, burgundy, brown, and blue. Burnished tones such as tempered brass, hammered bronze, fired brick, antique pewter, molten lava, and burnished brown are also shown.

New Vinyl-Coated Fabrics

Herculite Storage is a new specially developed vinyl-coated nylon fabric developed by Herculite Protective Fabrics. It is being used by Stoll Mfg. Co. to make wing- and tail-assembly coverings on twin-engine Beechcraft Super 18.

The fabric is strong and durable and will not mildew, rot, or support flames. It will not stiffen or crack even under cold-weather conditions. The fabric weighs 6 oz. per sq. ft.

Herculite 80, another new vinyl-coated nylon fabric developed by the company, is being used by the Navy for launch and gig canopies, gun canopies, gun covers, and other purposes.

It is lightweight and has a high degree of tear resistance. It weighs 18 oz. per sq. yd.

New Cotton Fabric

Argo Knitting Mills has introduced a new cotton-puff fabric in women's and children's panties. The new material called Dream Puff is made of 100%-cotton puff stitch. It is preshrunk and colorfast.

The product is packaged in a new see-through carton. Each box holds six pairs of panties in white and a variety of pastels. Retail price is about $3.

Men's Clothing Survey

Stress will be on midweight and lightweight garments, and medium shades and light colors will grow in importance for spring 1960 in men's clothing, according to a survey conducted by the Clothing Manufacturers Association of the U. S. A.

Wash-and-wear suits have acquired a definite position in the summer business and have primarily replaced suits made of 100% man-made-fiber fabrics.

Blends of man-made-fibers and wool will continue in importance. All-worsted tropicals are slowly declining in relative importance. Worsted-and-mohair blends have remained fairly stationary.

Coats for Fall

Glenoit Mills' knitted-pile fabric, Glenara, is being used in the fall lines of four coat houses.

The fall lines of these companies will show coats designed by leading European designers. The coats will be shown in seven natural shades and twelve high-fashion colors.

Firestone's Inflatable Dam

An inflatable dam designed to be collapsed when flood danger arises stretches 150 ft. across the Los Angeles River. The dam is made of nylon fabric coated with neoprene and is manufactured by the Firestone Tire & Rubber Co.

The dam can be left in place year around. It can be collapsed in 10 minutes should flood danger arise. As soon as the floor recedes, the giant bag can be inflated again by pumping water into it.

New Jacket Linings

A new line of Dynel and Dynel-blended pile-fabric jacket linings has been developed by Princeton Knitting Mills. The line will be introduced this fall in national advertising of Canadian Warm-Ups, a selection of outercoats manufactured by McGregor.

The linings are warm yet lightweight. They have good drapability and luxurious hand and appearance. They are available in high-fashion colors.

Bulky Woven Outerwear

Bulky woven cottons designed for men's and boys' spring outerwear stress knotted effects and fresh types of waffle variations in the Shelton Mills' collection. White is still important. Black and white are being revived.

HERE'S THE GOOD NEWS

ABOUT VYCRON*

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POLYESTER FIBER

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THE TEXTILE·APPAREL INDUSTRY

Vycron introduces the new era in polyester fibers. Important advances in quality place a world of new fabric achievements within reach of mill and converter . . . open up vast new possibilities for the garment manufacturer.

Aside from its unparalleled loom performance . . . of vital importance to mill technicians . . . Vycron offers a whole raft of superiorities that show up dramatically in the end-use product.

Greater strength, for example, making possible a lighter, sheerer, and at the same time, more serviceable fabric and garment. Greater affinity for dyestuffs, giving the fabric designer a more effective palette for his creative ideas. Greater resistance to pilling, offering the consumer better-looking, longer-lived apparel. A softer, more pliant touch, producing a new standard of suppleness, drapeability, and luxury-of-hand in fabrics made with polyester fiber.

These are but a few of Vycron's superiorities, with supporting evidence direct from the scientific laboratory. For the complete story of the fiber and its merchandising support . . . please contact us immediately.

Vycron is produced from **Vitel®,** Goodyear's revolutionary new polyester resin.

VYCRON POLYESTER FIBER is now being produced in the following forms:

STAPLE in 1½ and 3 denier, for industrial and apparel fabrics.

SPECIAL PROCESS YARNS Vycron filament yarn, combined with other yarns such as Bemberg® or rayon, for unusual surface interest in apparel and decorative fabrics.

TOW for Pacific Converters in 1½ and 3 denier for industrial and apparel fabrics.

TOW for Direct Spinners . . . to be spun into yarns for blouses, skirts, underwear, dresses, suits, rainwear and industrial fabrics.

CONTINUOUS FILAMENT YARNS
420 denier and greater, in 1½ and 3 denier per filament, for industrial uses.

VYCRON is America's only polyester fiber tested, quality-controlled, and certified under a regular program by the U. S. Testing Company.

We invite you to send for data sheets on Vycron. Ask, too, about our Vycron merchandising support program and how it can help you step-up sales. Call LE 2-3520.

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Fibers Division

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#4 in a series reviewing the "reasons-why" for the consumer acceptance of Arnel

ARNEL'S "STAMPS" OF CONSUMER APPROVAL

Answers to the questions, "Why?", "What made it work?", or even "How come?" are essential ingredients in the telling of any success story.

Arnel is a success story. This triacetate fiber is known in the industry for its processing and styling flexibility—its economic advantages.

But there's still another side to this success story. The consumer's. Their "stamps" of approval give real meaning to the Arnel story. For instance, consider WRINKLE RESISTANCE.

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3. This high resistance is due to the fiber's intrinsic properties, including low moisture retention (absorbing only 3.2% moisture under normal conditions) and excellent resilience.
4. This resistance is *not* at the expense of other characteristics. Fabrics of Arnel have a desirable hand plus eye-appealing beauty and drapability.
5. Fabrics carrying the official Arnel symbol have been pre-tested for performance claimed—including wrinkle resistance. (Tests are conducted free of charge by the Celanese Corporation of America.)

So take advantage of the great consumer acceptance of Arnel. Let Celanese work with you to develop new Arnel fabrics. Booklets 12A, 13A and 14A, containing the important technical procedure and facts about Arnel, are available by writing Celanese Corporation of America, Box 1414, Charlotte, N. C.

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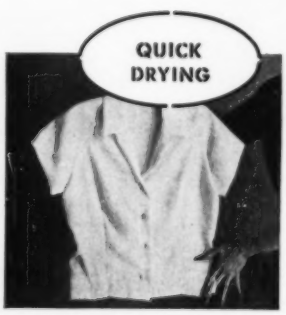
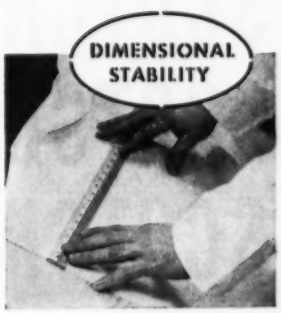
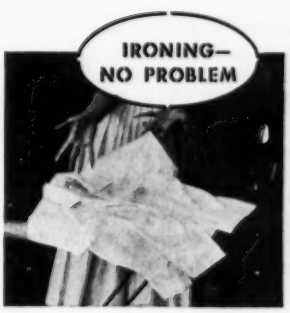


Arnel . . . a





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Help Make the Incentive System Work

• An incentive system can never be a substitute for good supervision, but good supervision can and should materially help the operation of the incentive system. Here are some of the things a supervisor can do.

By **M. A. CROSS,** Director of Industrial Relations, Dan River Mills, Inc.

With all the talk of automation and the tremendous forward strides being made in some industries, it is possible to conceive of a world in which push buttons replace virtually all human effort. This may be a dream or a nightmare, depending on the point of view; but at least those of us in the textile industry must assume that push-button production looks to be a long way off.

For the present and the foreseeable future, it is going to require plenty of manpower to convert fiber into fabric. In the future, as in the past and present, a well-administered incentive system will prove a valuable aid in arriving at fair workloads, in budgeting labor, and in rewarding employees for their above-standard performance. On the other hand, a poorly administered incentive system will not only fail to accomplish these objectives but will almost surely get you in trouble with your employees on the kinds of problems that prove difficult to solve.

An incentive system can never be a substitute for good supervision, but good supervision can and should materially help the operation of the incentive system. What are some of the things that a supervisor can do to help make the incentive system work?

The first requisite is that the supervisor accept the fact that he has a responsibility, and an important one, in seeing that the system works. If his attitude is that this is someone else's baby, that the standards man or the industrial engineer or the timestudy man shoulders the full responsibility, that all he has to do is shift the burden elsewhere, then that supervisor is going to contribute nothing at all to the smooth operation of the incentive system.

The second requisite is that the supervisor understand how the system operates. There can be and are great variations among incentive systems in various companies. Some are quite simple and some very complex; and even in the application of one system to different jobs within a plant, the vagaries of job conditions may call for different approaches.

Because of these factors, it isn't essential that a supervisor learn and be familiar with every detail and intricacy of the incentive system in all its variety of applications. But he should understand the fundamentals of how the system operates and of how it works on the jobs for which he is immediately responsible.

For example, he should understand how jobs are measured, how fatigue allowances are determined, how pay is figured for above-standard performance, the conditions, if any, for which downtime is paid, and what happens if job conditions change and the rate gets off-standard. The supervisor should have enough knowledge of the fundamentals of the system to answer intelligently questions raised by employees and to request assistance or review when something goes sour, as it occasionally will.

The third point is that the supervisor should cooperate with the standards man or whoever has the responsibilty of measuring jobs and setting rates. Engaging in a running battle with him, always saying that the rates he sets can't be right, and finding special delight when he does prove to be wrong are not evidence of cooperation.

There are ways that you as a supervisor can help the standards man. To mention a few, if a job in your department is to be studied: work with him in developing the best methods for doing the job; help him in selecting employees who will give a fair, honest study; try to see that the flow of work is smooth and that employees receive the materials and supplies they require; pave the way for him by making sure employees know why he is in the department and what he is doing.

In other words, help him to make a study under the best conditions and under conditions that will be maintained when the rate is established.

A fourth point is to do a good, conscientious job of explaining changes to employees. Sometimes the change may be easy to explain, such as a reduction in end breaks or loom stops that require a routine rate adjustment. Other times the change may be more complicated and involve new methods of doing the job. New and improved machinery may result in entirely different methods, plus reduced frequencies.

But whatever the change, it is significant to recognize that the employee wants and is entitled to know how his job has been affected and why his rate has been adjusted. And it is well to get there first with an explanation of the change backed by facts, rather than to wait for the employee to come to you in a questioning and disturbed frame of mind.

CONTINUED ON PAGE 158

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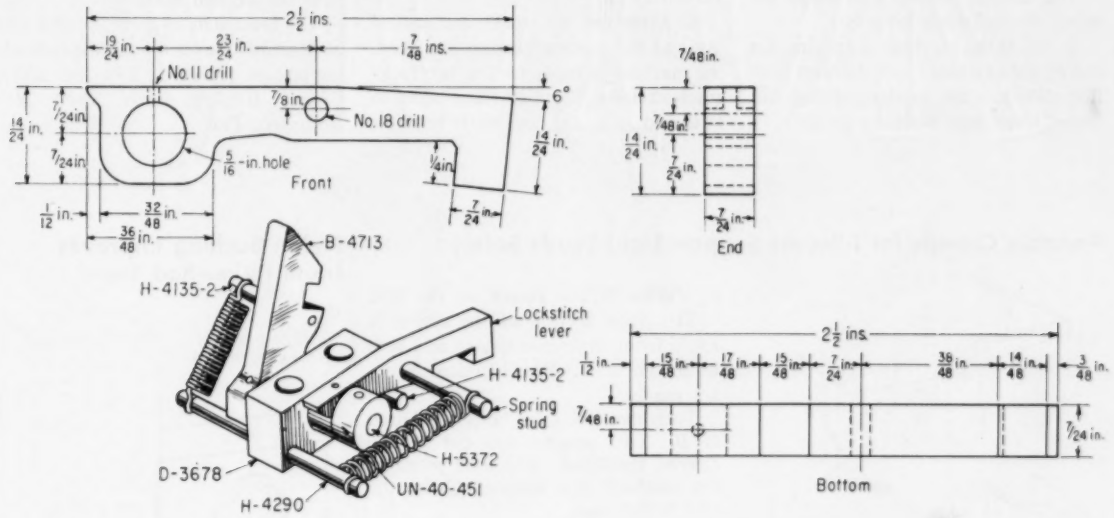
Lockstitch Lever Keeps Welt End From Unraveling



Since the advent of untwisted yarn, our full-fashioned-hosiery mill has experienced quite a bit of trouble with the welt yarn unraveling from the end welt hooks on the right side of the welt bar after the welt ends are cut in the hook-up. Consequently, we accumulated quite a bit of waste.

After trying many different ways to stop this trouble, I had the idea that if it were possible to run two lockstitch courses around the two end needles on the right side of the needle bar, the knitter could cut the welt ends off short in the hook-up without the welt end unraveling from the welt bar.

This action also would keep costly pullers on the welt end from being cut off too long and becoming entangled with the welt hooks when the welts are turned. The welt ends would be prevented from hanging on the take-up roll when the stockings are being removed from the machine at the end of a set.

To solve this problem, I built a lockstitch lever from a piece of metal about 3 ins. long, which I cut from an old narrowing rod. The device worked perfectly; so I installed it on all our knitting machines.

You can make the lockstitch lever according to the specifications shown in the accompanying diagram. Numbers refer to catalog parts, some of which are not shown in the sketches.

Use the holder assembly for the friction box (03434-A), and remove the short handle on the right side and replace it with the shop-made lockstitch lever. Then with a small rat-tail file, elongate the two holes in bracket (D-3678) to allow for adjustment before replacing the unit on the machine.

Before you adjust the unit, the top of the welt-carrier rod and the bottom of the end-stop handle on the right end of the machine must be filed at an angle to allow the welt-carrier end stop to fall in place when the welt carrier traverses between the second and third sinker in the two press-off courses.

Next, adjust the unit as follows:

Coulier the machine from left to right, and stop with the needles down and sinkers protruding slightly out of the sinker head. Push the welt carrier out between the second and third sinker on the right side of the sinker head. Pull the friction slide into the welt-carrier dog, and lock the friction. Leave the shock-absorber hinge (D-4462) up. Lift holding lever (B-4713), and lower the lockstitch lever.

With a small hammer, tap bracket (D-3678) until the end of the cut-out slot on the lever is firmly against the stop bracket (B-7780) on the welt friction box. Tighten the two ¼x2¼-in. hexagon-head capscrews.

Now lower holding lever (B-4713), unlock the welt friction, and leave the slide in the welt-carrier dog. Push friction to the right until holding lever (B-4713) drops into place on stop bracket (B-7780) on the welt friction. Set flat spring for holding finger (K-902) so that it will hold the carrier rod in position. Carrier is now in position for the knitter to pull the friction slide into the carrier-rod dog while the machine is knitting, preferably at the toe. This action saves time.

Raise holding lever (B-4713), and leave the lockstitch lever down in working position. Lock the welt friction. Coulier machine from left to right, and check setting. Care must be taken to see that the carriers are properly set between the sinkers and to the correct height.

The main end should be threaded through a thread guide properly placed to keep the end out of the way of the welt friction. Then thread through the porcelain eye (127) in the carrier-rod bracket at the welt friction and through the middle eye, bottom eye, and carrier tube. This thread-up may increase the tension a little, but it can be re-

moved in the back thread-up. If necessary, adjustment can be made on the slur cam or needle bar to obtain the correct length of the stocking in this section.

The correct sequence of steps for using the lockstitch lever is:

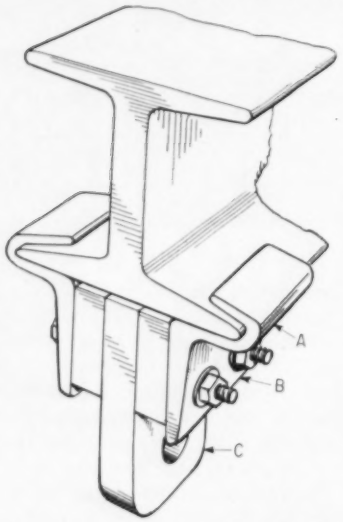
1. While the machine is knitting the toe of the stocking, pull the welt friction slide into the carrier-rod dog and lower lever into working position.

2. At the end of the set and while the splicing frictions are being unlocked, the welt friction is locked and the holding lever (B-4713) is raised. Leave the shock-absorber hinge (D-4462) up.

3. After the end racks are racked out and the splicing carriers are idled, the machine is ready for the two lockstitch courses. Coulier from right to left, and raise the lockstitch lever as the machine couliers to the right on the remaining press-off course. As the machine couliers to the left on the hook-up course, lower the shock-absorber hinge (D-4462) and continue with the normal hook-up.

The lockstitch lever, made and used as described, saves much time in hooking up sets. (K-4075) *Lawrence Koch, Comal Hosiery Mills, Inc., New Braunfels, Tex.*

Portable Clamps for I-Beams Support Light Loads Safely



Hoists or other equipment often have to be mounted overhead temporarily in production areas of mills when maintenance work is being done. We don't like to bore holes in the structural steel of our plant; so we've made several sets of I-beam clamps as shown in the sketch at the left.

The main section of the clamp is made from angle iron heated and bent as shown at *A*. Two identical pieces are made.

Then two holes for bolts are bored at *B*. Two spacers are cut to the desired thickness. The final piece of the assembly is a support, *C*, for the tool being used.

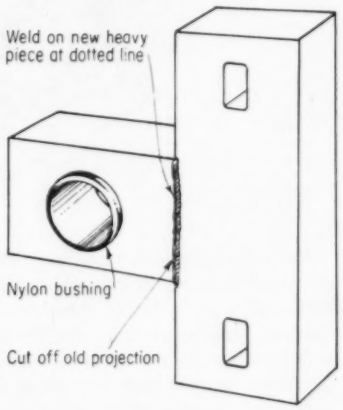
By using the holes at *B* as guides, holes are bored through the entire assembly so that it can be bolted together.

One or more clamps are made for every type of I-beam in our mill so that we always have the size needed. When the clamps are not being used, they are bolted together to keep them intact.

To use a clamp, we just remove the bolts, slip the jaws of section *A* over the I-beam, replace the bolts, and tighten the nuts.

The clamps are very strong and will support light and medium-light loads safely. (K-132) *Charles H. Willey, Penacook, N. H.*

Nylon Bushing Improves Loom Picker-Rod Stand



On our high-speed drop-box looms, we used to have lots of trouble with the bushing coming loose in the picker-rod stand at the head end of the loom. The loose bushing soon wore the threads out of the picker-rod stand. As a result, we had shuttles thrown crooked and broken warp ends.

We eliminated this trouble in the following way:

We cut off the back end of the picker-rod stand as shown in the sketch. Then we welded a thicker and heavier end to the stand.

But instead of having threads for a hardened-steel bushing, the new section of the stand has only a hole. A nylon bushing is pressed into this hole after the picker rod is placed through the hole.

The nylon bushings stay in place and do not wear the picker-rod stands. They can be tapped out easily when we have to remove the picker rod to replace a picker. (K-3996) *Charles R. Batzer, Lancaster, Pa.*

$25 KINK WINNER

The $25 prize for the best Kink in June was won by:

M. G. Tate, Clemson, S. C., for his Kink

"Determine Loom Production Quickly With This Table"

WATCH FOR NEXT MONTH'S WINNER

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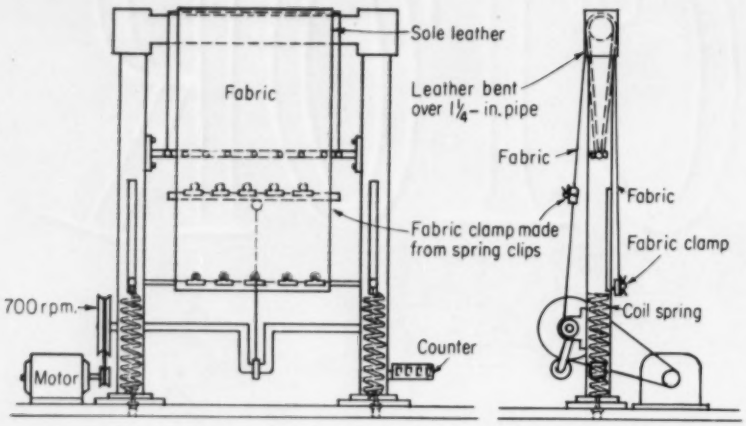
This Abrasion Tester Simulates Service Conditions



We substituted leather for the usual abrasive in this abrasion tester, and we get results that are better correlated to actual conditions of wear than are obtained with harsher surfaces.

We built the frame of the machine from 1¼-in. steel pipe. A piece of ¼-in. sole leather was bent over the cross-piece and fastened to a 1x⅛-in. piece of flat stock bolted into the uprights.

A crank with a suitable throw, say 10 to 12 ins., is mounted low on the uprights and belted to an electric motor so that the crank runs at 700 rpm.

Coil springs are slipped into the uprights. Slots are milled in the uprights so that hooks mounted on the springs are free to move upward as the crank pulls the goods over the leather.

We made clamps to hold the fabric from common spring clips attached to a 1x⅛-in. flat iron strip.

One of these clamps is fitted to slip onto the hooks mounted on the top of the coil springs. The other clamp has an eye that receives the connecting rod from the crank.

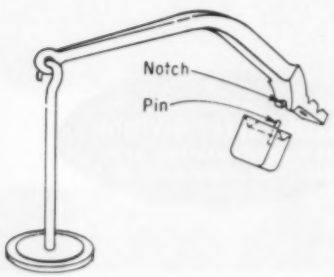
A counter is mounted on the crank arm so that records can be kept of the abrasion tests.

The coil springs should exert enough tension to keep the cloth snugly against the leather on the reverse throw of the crank.

The effect of the cloth rubbing against leather is very similar to what happens in actual service. (K-3295)

Pin and Notch Repair Friction-Type Let-Off

Our multishuttle looms have steel-band friction-type let-offs on one or both ends of the loom. But the friction-lever stands wear out, and the friction levers fall off.



We eliminated this trouble by cutting a notch in the lever and putting a matching pin in the stand.

A $\frac{3}{16}$-in. hole is bored in the center of the stand V-section ½ in. deep. A bolt from a loom shuttle is cut off to an over-all length of ¾ in. and is pressed into the hole.

Then a notch is cut into the center of the friction lever. The notch is ¼ in. wide and ⅜ in. deep. (K-4017) *Adrien Delage, Biddeford, Me.*

Marks on Slasher Beams Help Control Yarn Stretch

We hold the over-all yarn stretch at our slashers between 1½ and 2%, but stretch from section beam to section beam used to be uneven. To correct this condition, we now use the following method:

A chalk line is drawn across the sheet of yarn every 1,000 yds. at the take-up of each section beam at the warper.

If the friction on all section beams in a set at the slasher is the same, all chalk marks on section beams appear simultaneously after every 1,000-yd. length is unwound. The order in which the marks appear also indicates the comparative amount of stretch on each beam. The chalk mark that comes up last has been stretched most.

When all marks do not appear simultaneously, friction on the beam heads is adjusted so that all marks appear together after the next 1,000 yds. are run. We sometimes have to align beam journals to control drag. This corrective operation is repeated until all marks appear together.

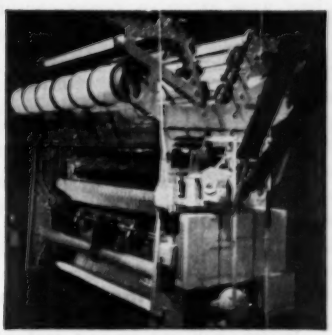
The last beam in the creel, the one most distant from the size box, is usually stretched more than others; and therefore it requires more corrective attention. (K-130) *M. D. Dixit, Poona, India*

Use a Mirror To Check Quill Bin

If you use a chute-type attachment to supply quills to the quilling machine, suspend a large mirror to the ceiling over the bin so that the quill cleaner can see how full or empty the bin is. (K-4001)

Fluorescent-Painted Fuses Are Easy To Replace

Electricians have a hard time replacing fuses in mill production departments because fuse boxes are often badly lighted. But this job is much easier if the fuses are painted with fluorescent paint. A different fluorescent color for each type of fuse also helps the electrician select the correct fuse for each job. (K-3238)



There's no limit to the lace patterns with the NEW KIDDE 24 BAR RASCHEL KNITTER

Look at the lace in the picture. Every one of those intricate and varied patterns can be made on a single machine . . . Kidde's new 24 bar knitter. Look again at the quality of the lace . . . at the fine detail and the clear outlining of the pattern. That's quality lace turned out at moderate cost.

This new addition to Kidde's line of Raschel knitters is built to operate with 24 bars . . . but can be used with 14 or 18 for less intricate patterns. It turns the lace out fast, too . . . up to 300 courses per minute.

Like all Kidde machines, the new 24 bar knitter is simple, accessible and easy to work on. Equally important, it is ruggedly built to withstand round-the-clock, high speed operation. Write to Kidde for full information.

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CIRCLE 135 ON READER SERVICE CARD

Plain Spindle Bearing Is Changed to Ball Bearing

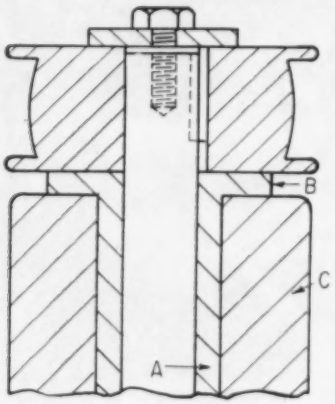


Fig.1

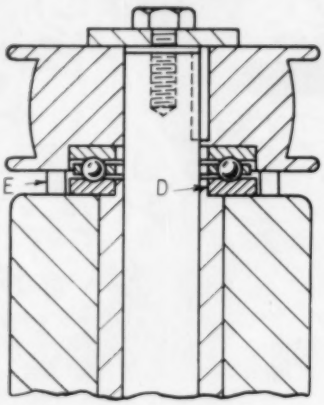


Fig.2

In a series of high-speed vertical pulleys, we formerly had plain bearings as shown at *A* in Fig. 1. This bearing was a combined radial and thrust bearing with the bottom section of a pulley resting on flange *B*.

Lubrication for the thrust bearing was provided by a grease nipple (not shown) in the upper surface of the pulley. Although we greased the pulleys at regular intervals, friction and heat were excessive, power consumption was high, and the flat surfaces stuck up frequently.

We converted the sleeve-thrust bearings to ball-bearing-thrust bearings as shown in Fig. 2 without altering the vertical positions of the pulleys.

The thrust bearings were removed from machine frame *C*, and the flanges were turned down in a lathe to provide the small surface shown at *D*. Surface *D* is a pressed fit for one element of the ball-bearing raceway so that it will not rotate.

The other element of the ball-bearing is a pressed fit in a recess machined in the body of the solid pulley. The recess depth was controlled so that the height of the pulley from the machine frame was not changed.

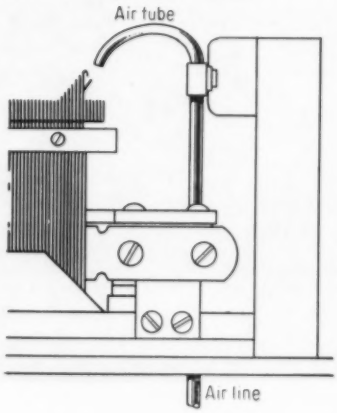
The complete assembly was finished by fitting a soft piece of felt, *E*, between the bottom of the pulley and the machine frame. Although the felt seals the bearing against dirt and retains the lubricant, it runs free from friction. (K-3228) *Clifford T. Bower, London, England*

Garnet Paper Picks Up Waste And Reduces Downtime

In tying up ends of low-denier nylon, waste used to stick to my hands when I was trying to tie the knot at the quiller. This waste is formed where you have to pull a few feet of yarn through the tension to make sure there is no slack twist.

I solved this problem by pinning a piece of garnet paper 4 ins. square to the bib of my apron. When waste sticks to my hands, I brush them lightly across the paper and the waste in transferred to the rough surface. After the knot is tied, I pick off the waste and place it in my apron pocket. This simple system has reduced downtime considerably. (K-3913) *Joseph A. Sewesky, Berwick, Pa.*

Air Nozzle Keeps Latches from Sticking



Accumulation of lint used to present quite a problem in our knitting mill. It would cause latches to become stiff and accounted for many imperfections in the goods.

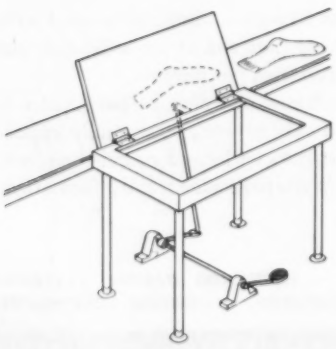
Eventually it got to the point where needles had to be taken out in order to open the latches, which of course meant loss of production.

We overcame this problem by positioning a ½-in. rubber tube over each knitting machine with supply pipes running to an air compressor. A small nozzle at the end of the rubber tube controls the air pressure.

We find this system superior to the suction method of cleaning used by many mills. (K-3956)

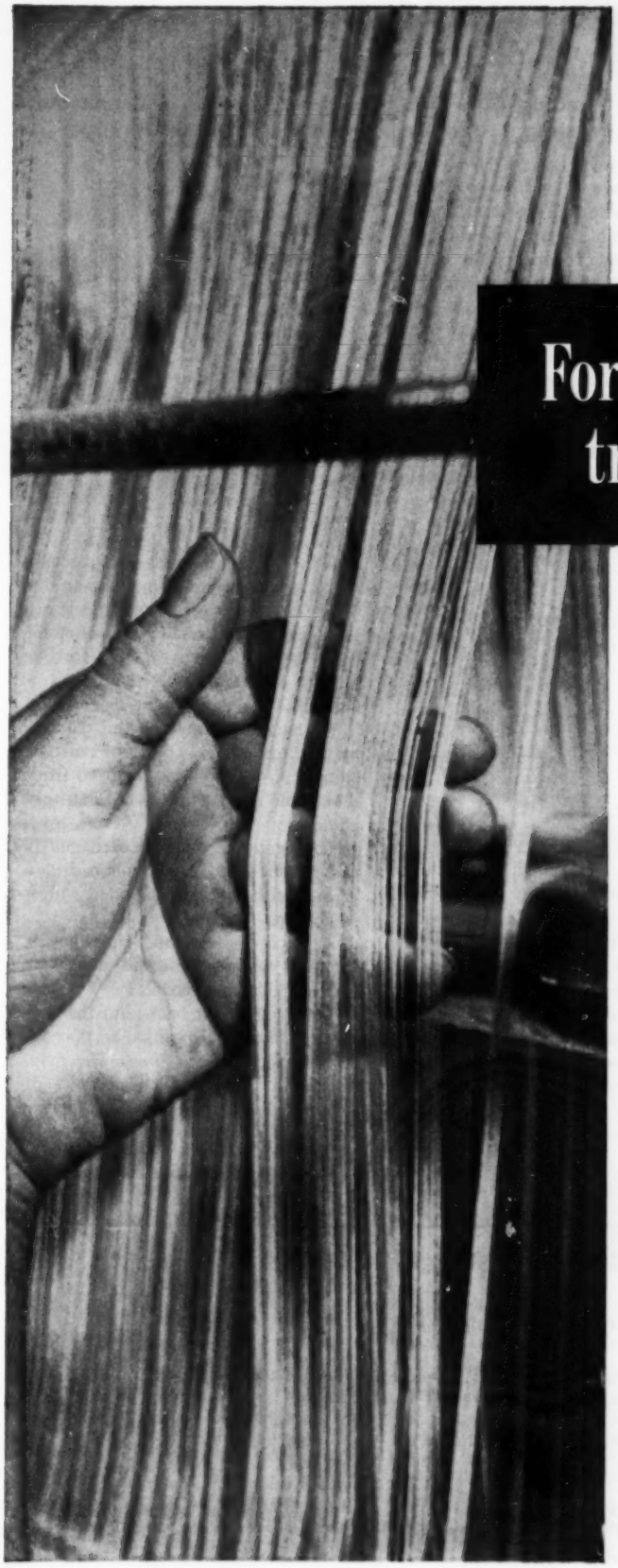
Flip-Top Inspection Table Speeds Up Sock Inspection

In our mill, we inspect socks just before they are placed on the conveyor belt for transmission to the boxing department. This operation used to require considerable handling that consumed valuable time.



We cut our manual handling time substantially by building a flip-top inspection table as shown in the diagram. When the inspection is completed, the operator simply presses his foot on the pedal and the lid flips up high enough to dump the sock on the conveyor belt.

When the pedal is released, the lid returns automatically to the down position. If desired, springs or weights can be attached to the lid to make the action even faster. (K-3218)



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In warp sizing, TEN-O-FILM starches cook completely in thirty minutes and remain stable through prolonged heating and circulating. Sizing and desizing of all types and blends of yarns may be done at lower temperatures to reduce "bleeding," and permit use of a great variety of dyes.

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CIRCLE 137 ON READER SERVICE CARD 137

Discarded Desk Lamp Holds Magnifying Glass

In knitting-mill repair shops, where a magnifying glass is needed for inspecting and assembling precision parts, both hands are needed to do a good job. Here's how to make a holder for the glass:

Remove the socket and wiring from an old desk lamp, and fasten the handle of the glass onto the end of the flexible arm with a rubber band or clamp. Then adjust the flexible arm into the most convenient position to observe the part you are working on.

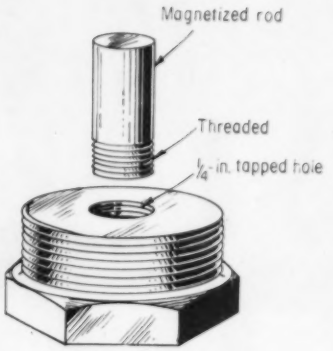
When the job is done, the glass is easily removed and stored safely until it is needed again. (K-3695)

Assembly Winding Cuts Out Snarls at Twisting

We twist two-ply yarns from cone supply packages. The low-twist yarns give no trouble; but we used to have plenty of trouble in trying to run lively high-twist singles from stationary supply packages. The yarn would snarl as it left the package, and tension devices did not seem to help.

The problem was solved by asking the winding department to assembly-wind two ends on each package. The ends, which lie side by side, come off easily and snarling is completely eliminated. This simple operating technique has saved us large sums of money and untold headaches. (K-128) *H. A. McLean, Bradford, England*

Magnetized Rod in Crankcase Prevents Machine Damage



Many machines, such as air compressors and pumps, maintained by the mill engineer or master mechanic have crankcases. Small pieces of metal from these machines or from foreign objects often fall into the oil in a crankcase and damage the machine.

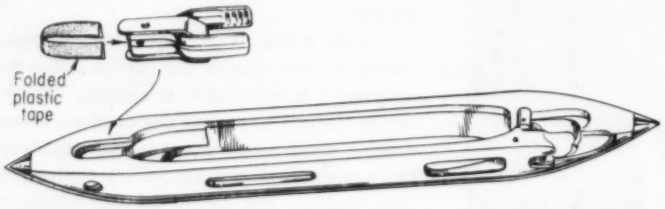
We have eliminated all this damage by altering the drain plugs of our machines. A drain plug is removed from a machine and carried to the mill machine shop.

The center of the threaded end is center punched. Then a hole is drilled through the plug and threaded with a ¼-in. tap.

A piece of steel rod 3 ins. long is threaded to screw into the plug. This rod is highly magnetized.

The plug is put back into the machine in the usual position so that the rod is inside the machine. The magnetized rod retrieves all particles of metal, and they are removed when the crankcase oil is changed. (K-3885)

Plastic Electrical Tape Tightens Loose Shuttle Clip



When shuttle clips become loose in a loom, bobbin-transferring action soon wears the wood of the shuttle so that the clip cannot be retightened. As a result, faulty bobbin transfers and broken picks in fabric are made.

This wear and lost motion can be taken up with a double strip of plastic electrical tape. The tape is folded lengthwise so that the adhesive sides are outside. In this way, the adhesive holds the tape to the shuttle clip.

The clip is placed in the shuttle in the usual position. A sharp-pointed wire is run through the shuttle-screw holes to make holes in the tape. Then the screw is inserted through the shuttle, tape, and clip. The shuttle can be run indefinitely. (K-115)

[*If present practices of the better mills of inspecting shuttles and retightening all screws a minimum of three times each week are followed, this wear will not occur.*—EDITOR]

$500 FOR BEST KINK IN 1959

$25 for Best Kink Each Month—Plus $5 to $10 for Every Kink Accepted

A KINK . . . is any idea that will cut costs, improve quality, reduce work, increase production, or make work easier.

You can send in as many Kinks as you want to any month.

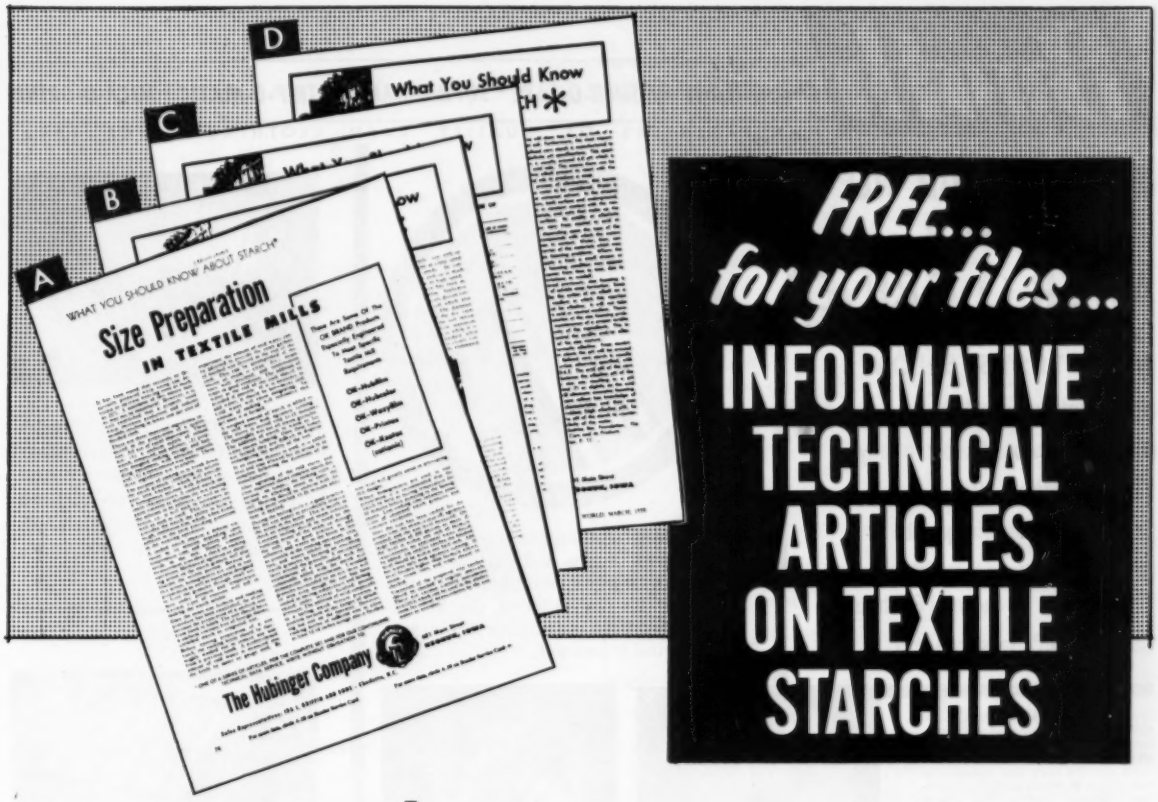
All kinks are paid for on acceptance.

Previously published Kinks are not eligible for prizes.

Let us know if you don't want your name published.

Prize winners are selected by TEXTILE WORLD readers. At least 300 will be asked each month to vote on the best Kink that month. In case of ties, duplicate prizes will be paid.

Send Kinks to:
Kinks Contest, TEXTILE WORLD
201 E. Coffee St., Greenville, S. C.



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During the past several months, as a service to all our friends in the Industry, we have presented a series of technical articles concerning textile starches. Reprints of these information-filled articles, as well as future articles, are available to you in convenient filing form just for the asking. Simply fill out the coupon below, and we shall be happy to send them to you.

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Booth

Originators of **SUPR-O-TAPE • SUPR-O-BAND • STRIP-O-MATIC • MICR-O-GRIND**

MANUFACTURERS OF QUALITY CARD CLOTHING SINCE 1892

REDUCE YOUR NEP COUNT! WITH MICR-O-GRIND*

*Pat. Pending

CARD CLOTHING

MILL TESTS SHOW:

Nep count reduced 40%

Blending improved substantially

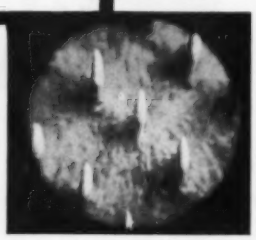
Yarn strength up 10%

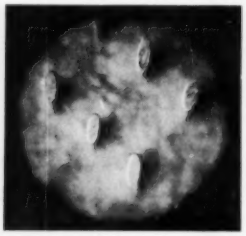
Grinding 80% less frequent

Grinding time less than 30 minutes (normal 6-8 hours)

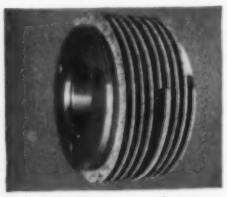
Stripping 65% less frequent

Booth card clothing may now be obtained with a **new and exclusive** extra sharp needle point. With your first purchase of this new clothing, the MICR-O-GRIND head is available so that you can regrind it yourself.





Note needle point from MICR-O-GRIND (left) compared with conventional flat point (right). Extra sharp MICR-O-GRIND points card out the neps and reduce the nep count as much as 40% on cotton. Sharper points also allow stock to release itself—hence less loading—and also give greatly improved carding action. Stripping of cotton cards only once a shift—on woolen cards as little as once a month.



Grinding discs are spiraled to take off the heel of each tooth. MICR-O-GRIND head fits your conventional grinding shaft.

HOW IT WORKS

MICR-O-GRIND card clothing is ground with spiral abrasive discs that take the heel off the wire. Accuracy of initial grind is assured by exclusive Booth electronic monitor controls. This leaves a needle-like point, long recognized as ideal for card clothing. *Never before has this ideal been attained.* Conventional grinding invariably leaves a flat point because no way was known to grind the teeth to a perfect point.

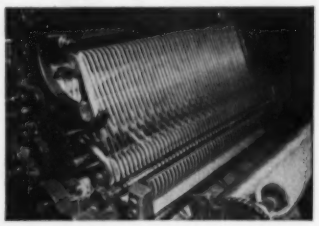
IMPROVED QUALITY

The needle point of the teeth holds the fibres long enough to be thoroughly carded and yet does not tear the fibres. This provides a more gentle combing action for increased yarn strength, better blending and reduces neps by as much as 40% in cotton carding.

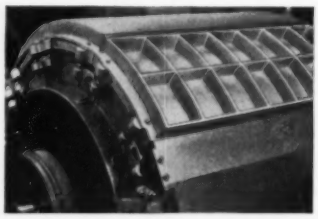
Needle point is smooth enough to release the stock easily, yet the fine serrations (as seen under a microscope) will not let the fibres escape without being carded. This also means that there is less beating action at the doffer comb as the web flows more readily off the card.

REDUCED COSTS

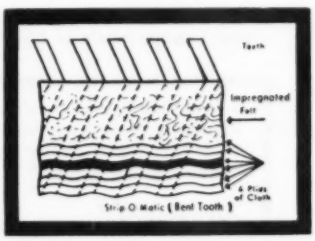
through reduced Down Time for grinding and stripping. MICR-O-GRIND clothing is very inexpensive—only 5% more. The MICR-O-GRIND needle point can be applied to any type of card clothing—the only difference is the point. In a cotton mill, you can get your standard 100's, 110's, etc., in either CCWC, CWC or rubberfaced foundation—also any woolen clothing.



SUPR-O-TAPE—the new proven condenser tape for longer life—improved roving—no stretch—no cracking—no need to oil—no dropped ends—holds square edges indefinitely.



BOOTH offers GRAN-O-TOP—SRRL Granular Card Top Conversion complete unit. Gain the advantages of this new method of carding. Write today for full details.



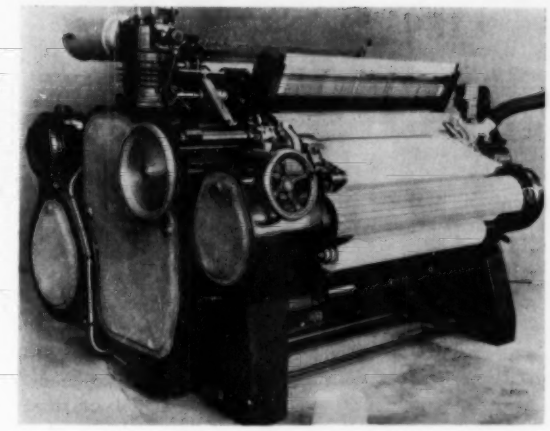
STRIP-O-MATIC—clothing greatly reduces stripping waste, down time and costs.

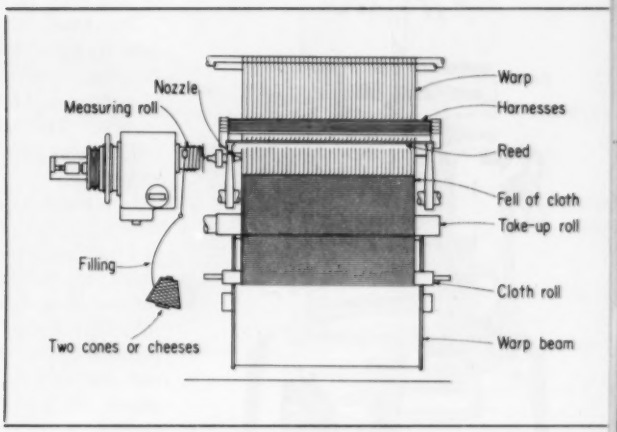
BENJAMIN BOOTH COMPANY

ALLEGHENY & JANNEY STS., PHILA. 34, PA.

Booth

Maxbo Shuttleless Loom





The Maxbo shuttleless loom invented by Max Paabo, Norrkoping, Sweden, in cooperation with the Swedish Co-operative Societies, will be manufactured for the U. S. and Canada by Southeastern Loom & Machine Works, Greenwood, S. C., as a licensee. It will be sold by Edda International Corp., Calhoun Towers, Greenville, S. C., and 468 Fourth Ave., New York 16, N. Y.

The loom has been increased in width to 40 ins. from 26 ins.; speed of the 40-in. loom is 330 ppm. The loom is said to weave plain, twill, and satin patterns of cotton, rayon, and wool. First fabrics to be woven in America are expected to be denim and 80-square.

Filling is blown through the warp by a stream of compressed air passed through a nozzle on the left-hand side of the loom. This air is compressed individually for each loom by a 2-hp. motor that also drives the loom.

A suction device on the right-hand side of the loom holds each pick of filling in correct position in the warp until it's beaten into the fabric. Vacuum action comes from a central line similar to that of a card stripper.

Blowing action is said to keep the filling very clean of lint; vacuum action draws much lint off the over-all loom to improve weave-room cleanliness.

Filling comes from two cones or cheeses of yarn, pigtail creeled, at the foot of the left-hand side of the loom. Selvage ends are loose outside the fabric and are held in place by a leno-weave at the edge of each selvage.

A filling-measuring roll pulls the correct length of filling yarn off for each pick of filling and cuts it before it is inserted into the warp shed. The filling is pulled off the yarn cone at constant speed.

The loom is said to have 75% fewer parts than conventional shuttle looms with the elimination of the shuttle, battery, race boards, picker sticks, and other related parts and with the redesign of the remaining conventional loom parts.

Other features are: automatic lubrication, sealed loom-sides to exclude lint and dirt, electric warp stop motion from drop wires, electric center-type filling stop motion, vibration-free operation, and less floor space needed. The air compressor acts as a loom brake. **(Circle T-1 on Reader-Service Card)**

Lubricator for Loom Parallel

Draper Corp., Hopedale, Mass., and Bijur Lubricating Corp., Rochelle Park, N. J., have announced the addition of automatic lubrication to Draper's link-type parallel. This addition supplies automatic lubrication to one of the most-difficult lubrication positions of a loom.

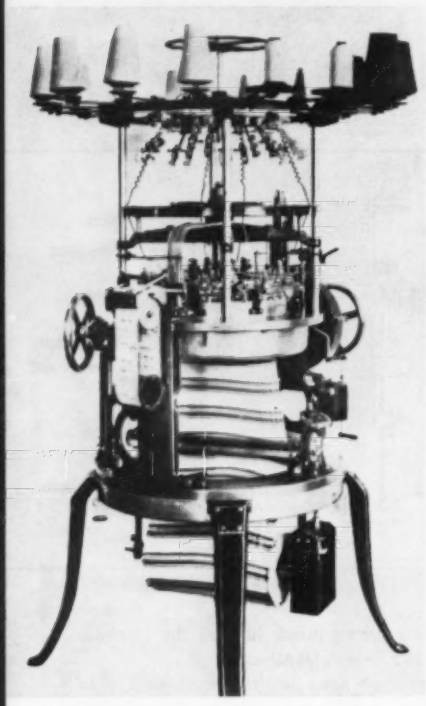
The Bijur Meter-Unit is applied to Draper X-2, XD, and XP-2 looms and is driven from the crankshafts of the looms. With this lubrication system, excess lubricant is not thrown onto the warp. **(Circle T-2 on Reader-Service Card)**

Filling Bobbin

A filling bobbin with a paper barrel and plastic base has been developed by Van Katwijk's Papier en Cartonverwerkende Industrie, Aalten, Netherlands. Chief advantages are that the barrel can be replaced and the plastic base can be reused.

The barrel is made of resin-impregnated paper that holds its shape under extreme conditions of humidity and temperature. The base is made of wear-resistant plastic on which metal rings are mounted. **(Circle T-3 on Reader-Service Card)**

Striping Knitting Machine



A knitting machine to make trims for outerwear has been announced by Wildman Jacquard Co., 1210 Stanbridge St., Norristown, Pa.

This versatile machine knits one-by-one, striped fabric of unlimited patterns, picot trimmings, half-cardigan, English or round welt (shown in the photograph), French or tubular welt, and clearing course or draw thread. Combinations of the variety of stitches produce fabrics for cuffs, collarettes, sweater bottoms, underwear, outerwear, sportswear, and beachwear.

The machine is built in cuts of 7 to 15 needles per inch, 22-in. cylinder diameter with 10 feeds, and 30-in. cylinder diameter with 16 feeds. Each feed is controlled independently by a paper pattern, which is punched on a pattern machine.

Therefore the machine can operate as a single-feed machine or in any combination of feeds. **(Circle T-4 on Reader-Service Card)**

Change-Over for Z-Spinning

A saddle-guide change-over for Z-spinning that modernizes Z-drafting by replacing the front top-roll cap-bar assembly with a self-aligning anti-friction front roll has been announced by Dixon Corp., Bristol, R. I.

The front roll is cap-bar free and rides on a prelubricated and sealed ball bearing; lubrication and wear are eliminated, and lint collection is greatly reduced. The self-aligning front top roll reduces ends down and increases yarn quality.

Construction consists of a back saddle bracket, a front saddle guide, and top and bottom rolls. The back saddle bracket fits over the back bar rod and extends up over the back top roll. The Rulon bearing, used at the point of contact between the back top roll and back saddle bracket, is completely oil free and never needs lubrication.

The front saddle guide is pivotally connected to the back saddle bracket by a ball-and-socket connection that permits the front top roll to align itself. This self-aligning feature is important in Z-spinning, where distances between drafting rolls are greater than on normal cotton-type drafting. The arrangement assures accurate spacing between the front-roll bite and apron nip.

Dixon Corp. has also developed change-overs for Z-spinning to handle cotton fibers. The simplest of these change-overs involves addition of a middle top-roll apron and cage and necessary saddle and weighing parts.

For a more permanent change, Z-frames can be equipped with new roll stands, steel rolls, and complete change-over parts with either Duo-Roth or Casablancas double-apron types of drafting. **(Circle T-5 on Reader-Service Card)**

Portable Fire Extinguishers

Three carbon-dioxide portable fire extinguishers in 10-, 15-, and 20-lb. capacities in either trigger- or squeeze-valve actuating mechanisms are being offered by Walter Kidde & Co., Inc., Belleville, N. J. Hose and discharge nozzle assemblies are features of the extinguishers.

These hose-horn assemblies are also being offered as replacements for the manufacturer's 10-, 15-, and 20-lb. carbon-dioxide portable extinguishers already in use. The new horn assembly is easily screwed into old extinguishers and automatically upgrades their fire-smothering ability. New brackets are also available. **(Circle T-7 on Reader-Service Card)**

Multicolor Push Buttons

A series of modular-lighted push-button switch devices, Series 2, has been developed by Micro Switch Div., Minneapolis Honeywell Regulator Co., Freeport, Ill. The series has more than 34,000 possible combinations of parts and allows flexibility of operation for graphic-flow meters, etc.

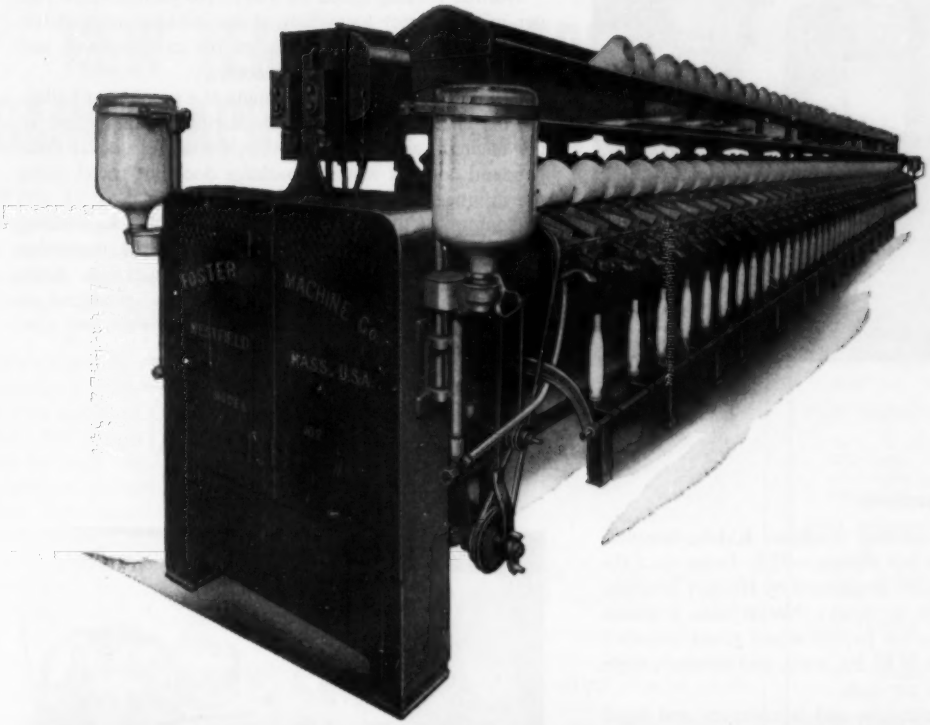
By selecting the proper modular components, the user can obtain switch units that perform almost all switching functions. A wide range of indicator colors and styles is available. Single-color display screens are available in red, white, blue, yellow, and green. Two-color screens are available in any combination of these colors. **(Circle T-8 on Reader-Service Card)**

Paint-Spraying System

Painting cost is said to be cut up to 60% with a No-Air Dyna Spray system developed by Lincoln Engineering Co., 4010 Goodfellow Blvd., St. Louis 20, Mo. The lightweight hand-operated spray gun atomizes paint without heat. Overspray and bounce-back are virtually eliminated. **(Circle T-6 on Reader-Service Card)**

FOSTER MODEL 102

Flexibility - Economy - Quality Winding



What "Flexibility" Means To YOU

The Foster Model 102 Winder is a *safe* investment, because it is adaptable to changing requirements. And changing requirements are the order of the day. This machine is suitable for any twist or count of yarn (except the very coarsest) and for any type of spun fibre — natural, synthetic or texturized. It can be equipped to wind traverses from 2¼" to 6", and to wind knitting cones, warper cones, parallel tubes, or dye packages; or can be built to wind 7" traverse. It will wind any cone taper commonly used and will wind at nine different angles from 9° to 18°. It may be equipped with yarn conditioning attachment, will efficiently handle damp yarn and soft twist yarns requiring little or no tension. Spindles can be readily added to existing machines.

The Economy and Quality features of the Model 102 are equally important, but space does not permit us to enumerate them here. Write for full details.

FOSTER MACHINE COMPANY

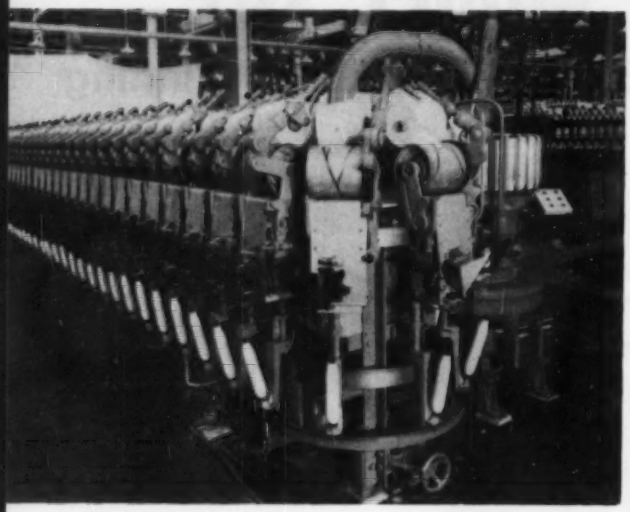
A Yarn Winder for Every Purpose

Westfield, Massachusetts, U.S.A.

Southern Office — Johnston Bldg., Charlotte, N. C.
Canadian Representative — Ross Whitehead & Company Ltd., 2015 Mountain St., Montreal, Que. and 100 Dixie Plaza, Port Credit, Ont.
European Representative—Muschamp Textile Machinery (Sales) Limited, Eider Works, Wellington Road, Ashton under Lyne, Lancashire, England.

634-B

CIRCLE 143 ON READER SERVICE CARD 143



Cone Winder

An automatic rotary-traverse cone winder designed to handle large spinning packages at high speeds has been announced by Thomas Holt Ltd., Rochdale, England.

Normal winding speed for 10s to 70s yarn is 1,350 yds. per min. Correct formation of the package is predetermined by special construction of the carrying arm and fulcrum; no adjustments are necessary.

The rotary-traverse drums, made of a special hard alloy, are driven by large-diameter rolls running the length of the machine on both sides. Each winding unit is independent, and the winding package does not travel along the driving roll as in previous models.

Contour of the track is designed to facilitate winding with a minimum of tension, which permits maximum speeds in the production of low-density packages. Knitting, warping, and dyeing packages can be produced on the same drum by changing the package holder and arm. **(Circle T-9 on Reader-Service Card)**

Warp-Knitting Machine

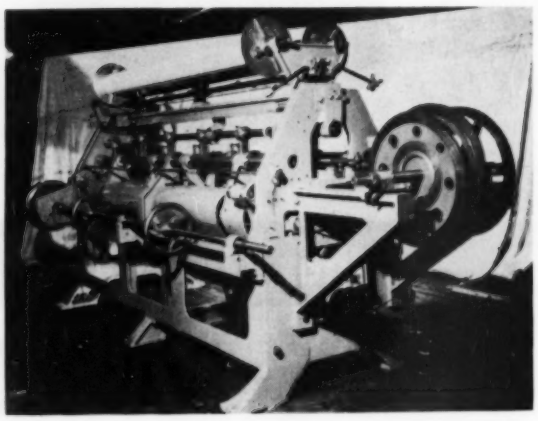
A patterned warp-knitting machine, Kiddier-Simplex, that runs 400 courses per minute—75% faster than the present model—has been announced by Hosiery Machine Building Co. Ltd., Bell St. Works, Nottingham, England. The photograph shows the pattern-wheel guard removed. The standard machine is 84 ins. wide, and normal gauges are 30 and 32 needles per inch.

The machine is built low and is compact and rigid. Special alloys are used to reduce the weight of needle-bar, sinker-bar, and guide-bar levers and guide bars.

Construction features eliminate sliding movement of reciprocating parts and guide-bar drag. The amount of swing of the guides and the height of the guides in relation to the needles can be adjusted. Warp-beam brackets are placed so that beams can be put in the machine easily and also provide plenty of head room for the operator.

A positively driven let-off assures constant letting off the warp. An automatic take-up is an important feature of the machine; once the fabric has been hooked on, no further attention is required.

Pattern wheels are furnished as standard equipment but pattern chains can be used if frequent pattern changes are made. Electric heaters keep needle, sinker, and guide bars at constant temperature by thermostatic control. **(Circle T-10 on Reader-Service Card)**



Slasher Squeeze-Roll Cover

A synthetic-rubber-covered size roll for slashers in a bright-red color for easy detection of warp-end breaks has been developed by Raybestos-Manhattan, Inc., Manhattan Rubber Roll Div., North Charleston, S. C. Completely uniform roll finish and density control size pickup closely.

The roll is also said to have a cushioning effect on yarn without being indented. Roll end caps prevent corrosion between the cover and the metal core. The cover can be reground to a smooth surface.

The cover is extremely resistant to starches, gums, softeners, oils, and chemicals. It is being used for both squeeze rolls and dressing rolls in mills weaving all-cotton, cotton-man-made-fiber blends, and all-man-made fibers. **(Circle T-11 on Reader-Service Card)**

DRAPER BRIEFS

NEWS OF INTEREST IN WEAVING

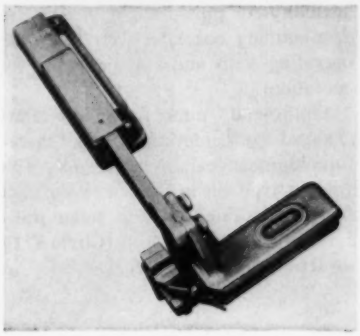
NEW TEMPLE CONSTRUCTION GAINS RAPID MILL ACCEPTANCE

With 17,500 units already in weave rooms, it is expected that a substantial increase in this amount will result from *further* Draper developments.

Introduced to the mills three years ago, the patented scissors-type thread cutter temple was initially available only for Draper X-2 looms. Enthusiastic mill interest and ready acceptance prompted the adoption of this new temple to other Draper loom models. It is now available, in most popular Draper temple constructions for X, X-2, XD, XP, XP Special, XP-2, L, O, XL, XK, and E model looms.

This new temple thread cutter features scissors-type upper and lower thread cutting knives. The upper knife assembly is mounted on a replaceable, rubber torsional bearing which requires no lubrication. Danger of temple lubricants staining the cloth is eliminated.

Fewer parts often reduce maintenance cost. The scissors-type thread cutter eliminates some parts common to former temples such as the thread cutter spring, conventional thread



cutter and top end, thereby reducing temple wear and maintenance costs

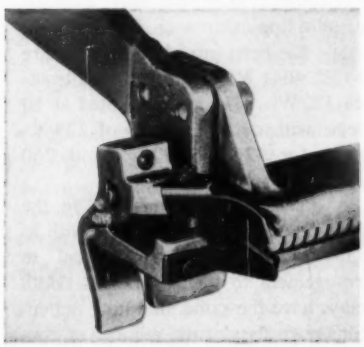
Another advantage of this new thread cutter results from a design which permits cutting shorter ends after bobbin transfer.

Thread cutter knives are regularly furnished with a rust-resistant finish but, when specified, they are also available with a satin-finish chrome plating for maximum rust resistance and a more durable finish.

The Draper #3 Selvage Post Attachment may be applied to all scissors-type temples except the #532 for E model looms. This selvage post attachment, also mounted on a rubber torsional bearing which requires no lubrication gives better selvages on many weaves.

Scissors-type thread cutter temples have proven their worth in the weave rooms where they are in use.

This original temple construction is another in the long line of Draper improvements in weaving equipment. It illustrates — once again — why it is good business to specify Draper quality parts and accessories which give the maximum in service and performance.



SCISSORS-TYPE THREAD CUTTER TEMPLES

#524 TEMPLES

for X and X-2 looms
4¼" **double** roll temple (cloth **over** rolls)

#525 TEMPLES*

for XD, XP, XP Special, and XP-2 looms
4¼" **double** roll temple (cloth **under** rolls)

#526 TEMPLE*

for XD, XP, XP Special, and XP-2 looms
4¼" **double** roll temple (cloth **over** rolls)

#528 TEMPLE*

for L, O, XL, XD, XP XP Special, and XP-2 looms
4¼" **triple** roll temple (tandem) (cloth **over** rolls)

#531 TEMPLE°

for XK, X, and X-2 looms
4¼" **double** roll temple (cloth **under** rolls)

#532 TEMPLE

for E model loom
4¼" **double** roll temple (cloth **over** rolls)

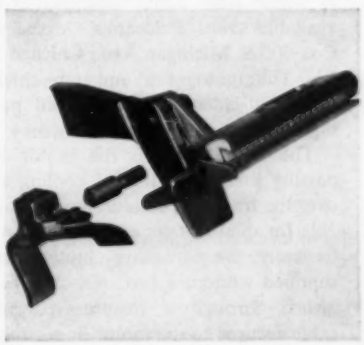
#536 TEMPLE

for X and X-2 looms
Three 4¼" triple rolls (1 over 2)

* On XD looms can be applied with solid lay and yielding reed

° On XK looms can be applied with solid lay and yielding reed

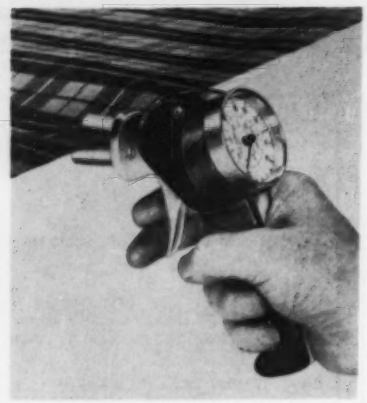
NOTE: It is important that mill give the LOOM ORDER NUMBER when ordering these temples.



DRAPER CORPORATION • HOPEDALE, MASS.

CIRCLE 145 ON READER SERVICE CARD

Tension Meter



The tension of fabric in process can be measured with an instrument announced by Tensitron, Inc., Harvard, Mass.

In operation, the meter is inserted in the selvage of goods to be tested by squeezing a trigger that separates reference rollers from the sensing roller. When the pressure is released from the trigger, the reference rollers return to test position, at the same time lifting the fabric against the sensing roller.

The pressure developed between the sensing and reference rollers is transmitted through a gear train to actuate the tension-indicating needle.

To get the total tension exerted over the face of the goods, the reading obtained by the 1-in. reference rollers can be multiplied by the width of the goods in inches. **(Circle T-12 on Reader-Service Card)**

Totally Enclosed Motor

A totally enclosed fan-cooled motor in frame sizes 326U and smaller is available from Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill. The motor fan and fan shield allow lint-laden air unrestricted passage without clogging.

The fan also cools the motor by passing a large volume of cooling air over the frame. A conduit box is available for dual-voltage applications. Alternately, single-voltage motors are supplied without a box; power is furnished through a neoprene-covered cable secured to the motor by a strain-protected mounting. **(Circle T-17 on Reader-Service Card)**

Quick-Opening Valve

A quick-opening bronze gate valve that provides tight shutoff flow from both directions, yet is easily operated, has been announced by Lunkenheimer Co., Beekman St. & Waverly Ave., Cincinnati 14, Ohio. It handles water, oil, and low-pressure steam.

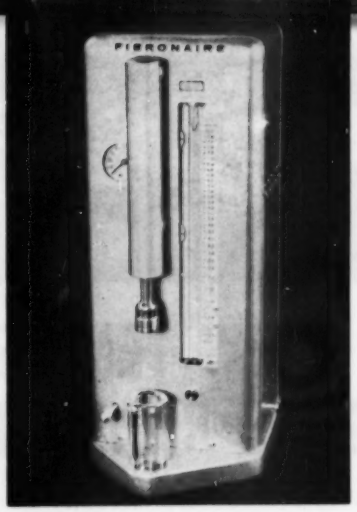
The valve features a ball-and-socket joint between self-adjusting disk faces and accurate guiding, which assure flexibility for pressuretight seating. A deep stuffing box effectively seals the operating stem and still permits easy operation.

End-to-end dimensions are unchanged from older models, and therefore interchangeability is possible. The valve is available in sizes of ½ through 4 ins. and is rated at 75-lb. steam pressure for water, oil, or gas. **(Circle T-14 on Reader-Service Card)**

Temperature Regulator

Proportional control of water, gas, or low-pressure steam is afforded by a temperature regulator announced by Barber-Colman Co., Rockford, Ill.

The self-contained unit can be adjusted to produce any desired temperature in the controlled medium, and is easily installed. The valve is available in ½- to 4-in. sizes. **(Circle T-15 on Reader-Service Card)**



Cotton-Fineness Tester

An integrated instrument called Fibronaire for testing the fineness of bulk staple-cotton fiber with maximum accuracy and speed by the porous-plug or air-flow method has been developed by Motion Control, Inc., 1905 Plantation Rd., Dallas, Tex. Except for manual loading of the weighed sample, the instrument is completely automated.

The instrument can operate at rates up to 2,000 samples per day for several weeks at a time with no significant drift in calibration, and correlation with Micronaire values on USDA check cotton is said to be excellent.

The Fibronaire is 7½x9x19 ins. over-all and weighs less than 18 lbs. It is completely self-contained with an automatic self-emptying moisture separator and pressure regulators that permit it to be connected to any compressed-air supply with 75 to 150 lbs. of pressure and a capacity of 0.8 cu. ft. per min. or more. **(Circle T-13 on Reader-Service Card)**

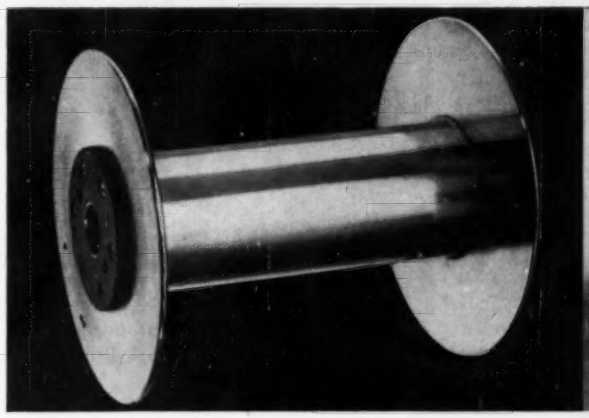
Compact Magnetic Relay

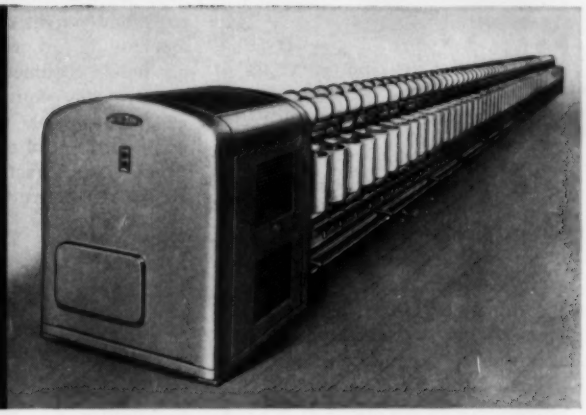
A compact magnetic relay, Type D, for pilot applications on direct-control panels has been introduced by Square D Co., 4041 N. Richards St., Milwaukee 12, Wis. The relay is rated at 10 amps. with contact ratings of 125 v.-amps. for 126 to 600 v., and 250 v.-amps. for 20 to 125 v.

A d.c. relay, a companion to the Type D a.c. relay, is available with as many as 10 contacts identical in arrangement to the a.c. model. Both relays have the same mounting dimensions regardless of the number of contacts. **(Circle T-16 on Reader-Service Card)**

BOOST PRODUCTION 50% WITH ALUMINUM SPOOLS...

increase twister capacity too!





Some 3500 aluminum spools are now saving money for one rug manufacturer on equipment such as this Whitin Cable-King Uptwister, manufactured by the Whitin Machine Works, Whitinsville, Mass. In addition, the aluminum spools were 25% less costly than the previously used spool material.

Mills find multiple benefits by using lightweight pressure-resistant aluminum spools in Whitin's ring and uptwisters

FASTER SPEEDS: Helps attain increase in operational speeds of up to 50%.

LARGER PACKAGES: Improved technology implemented with aluminum spools makes it possible to produce packages up to 10 lbs. of yarn. This permits production of cones of equal size of plied yarn without a plied splice.

GREATER ECONOMIES: Larger packages reduce splices by 66%, thereby stepping up efficiency of subsequent processes including tufting and weaving.

A typical application of aluminum spools is the special Whitin *Spoolmatic* Winders and *Cable-King* Uptwisters which have increased carpet yarn production by up to 50%. This equipment now brings to makers of twisted yarn everywhere all the benefits of this new multiple ply process formerly enjoyed only by tire yarn producers.

The lightweight spool itself is true, sturdy and pressure resistant. It was developed by Engineered Plastics, Gibsonville, N. C.—through the close cooperation of Kaiser Aluminum. It's another outstanding example of the production advantages and economies which more and more textile companies are realizing with aluminum.

To find out how aluminum's unique combination of advantages can best serve *you*, mail the coupon today.

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THE BRIGHT STAR OF METALS

SEND NOW FOR FREE BROCHURE!

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Gentlemen: Please send me your free brochure detailing aluminum's advantages for the textile industry.

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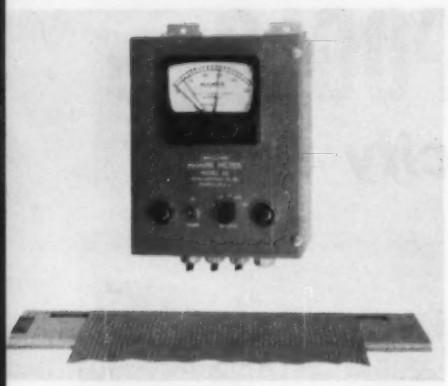
See "MAVERICK" • Sunday Evenings, ABC-TV Network • Consult your local TV listing.

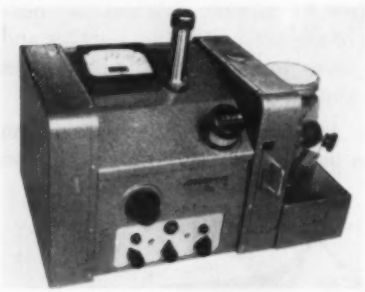
Cloth-Width Measurer



The Margin Meter, announced by Matrix Controls Co., Box 22, Somerville, N. J., monitors fabric width automatically as goods pass through the measuring unit. Designed particularly for inspection perches, the instrument keeps a running check on fabric width and signals the operator if deviations from standard are detected.

Accuracy of the meter is $\pm 1/8$ in. on a total scale of 10 ins. The meter can be applied in modified form to tenter frames. **(Circle T-18 on Reader-Service Card)**

Optical Colorimeter



An improved colorimeter called the Model D Color-Eye has been marketed by Instrument Development Laboratories, Inc., 67 Mechanic St., Attleboro, Mass. The instrument has a flush sample-viewing post and a new photomultiplier that has specially matched filters.

The Model D optical system improves sensitivity 10 fold and increases the capacity of the instrument to measure very light or very dark colors. An improved case design reduces the possibility of dust entering the unit. **(Circle T-21 on Reader-Service Card)**

Nuclear Thickness Gauge

Textile materials can be gauged to within two-millionths of an inch with a nuclear thickness gauge developed by Radiation Counter Laboratories, Nucleonic Park, Skokie, Ill.

The instrument is also useful for checking the thickness of coated materials, which it will gauge to 0.01% of total material thickness. Changes in basic unit weight can be detected in amounts as low as 0.005 milligrams per square centimeter.

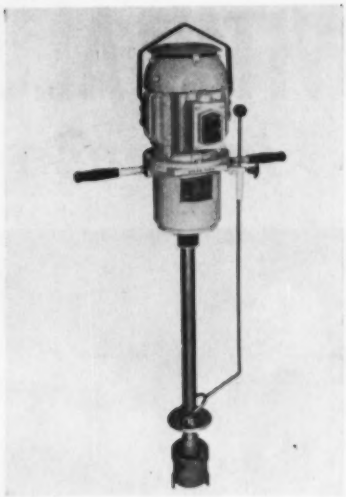
Automatic control of thickness and mass are possible when the gauge is used with control equipment available from the manufacturer. **(Circle T-23 on Reader-Service Card)**

Single-End Tension Control

The original Electrotense, manufactured by Lindly & Co., Inc., 248 Herricks Rd., Mineola, N. Y., for even and uniform tension on knitting beams or warper beams is now being made in a single self-contained tension control for Unifil loom winders, knitting machines, looms, single-end take-ups in laboratories, etc.

The single control can be supplied with 110, 220, or 440 v., a.c. It creates tension of 5 to 75 grams on a single yarn end passing between the disks. Tension is easily set by a built-in potentiometer. **(Circle T-20 on Reader-Service Card)**

Industrial Mixer



The shear-flow principle is used effectively in an industrial mixer announced by Gabb Special Products, Inc., Windsor Locks, Conn.

Two rotating impellers and two stationary stators enclosed in a cylindrical housing provide thorough dispensing, blending, or homogenizing of solids with liquids.

The unit is available in 2- to 10-hp. models at present. Larger ratings will be available. **(Circle T-19 on Reader-Service Card)**

Yarn Lubricants

Nyloil 167 is particularly suitable for the lubrication of nylon yarns of all types that are used to produce women's hosiery. Application is by oil jar or trough and will not gum or leave deposits in eyelets, sinkers, or dividers. The lubricant is available from Richmond Oil, Soap & Chemical Co., 1041 Frankford Ave., Philadelphia 25, Pa. **(Circle T-77 on Reader-Service Card)**

Atco Process Oil, marketed by Metro-Atlantic, Inc., Centredale, R. I., is recommended for spinning textured nylon or other man-made-fiber yarns. The oil is nonstaining and may be removed readily by rinsing yarn treated with it in warm water. Application is by roller attached directly to the spinning frame. **(Circle T-22 on Reader-Service Card)**

Automatic Frame Doffer

An automatic doffer for spinning frames has been introduced for sale in North America by Edward S. Rudnick, Room 404, Olympia Bldg., New Bedford, Mass. Called Auto-Doffer, the machine is built by Kanegafuchi Machine Mfg. Co. Ltd., Osaka, Japan.

Basically, the doffer consists of two doffing units that travel along guide rails on either side of the frame at 17 to 25 ft. per min. while removing full bobbins and replacing empty ones.

The manufacturer claims that the machine will doff a 400-spindle frame in less than 2 mins. with 30 to 50% less yarn breakage than hand doffing.

The doffer grips only the top ¼ in. of the bobbin or tube, which prevents yarn damage or sloughing. Damage to spindles is minimized by a kicker that prevents bobbins from sticking to spindles. Stop motions are activated if a bobbin is misaligned.

The doffer is built in both portable and permanently mounted models. About 15 ins. of alley space are required for operation of the 330-lb. machine.

Sequence of operations at each spindle is as follows:

A guide moves the yarn and traveler to the back of the ring, and another guide tilts up the lappet and thread guide.

A kicker lever forces the bobbin or spinning tube slightly upward to break contact with the spindle.

A swinging arm with rubber grippers grabs the top surface of the full bobbin, lifts it from the spindle, and places it over the doffing box.

The yarn between the lifted bobbin and the spindle enters a slit in another guide and is cut off.

The loose tail wraps around a roller that allows enough slack for the empty bobbin to be placed onto the spindle without breaking the yarn.

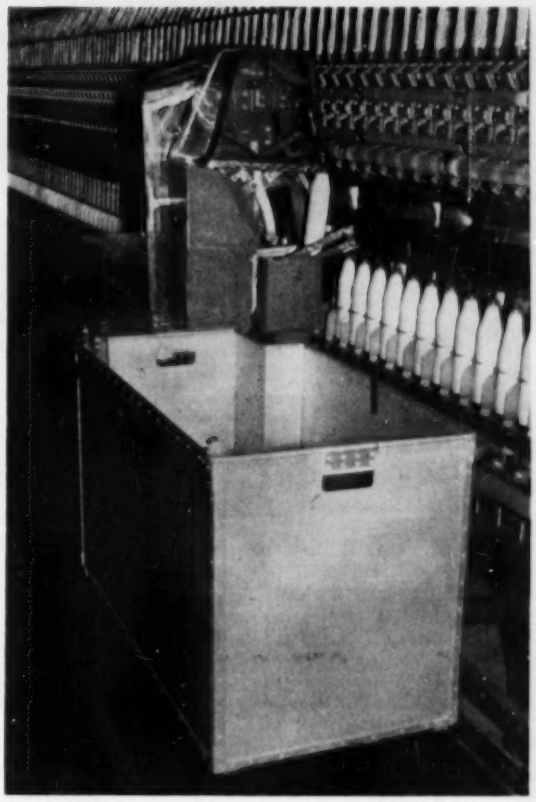
The grippers on the raised bobbin open and drop the bobbin down a chute into the full-bobbin box.

Empty bobbins are individually lifted from a hopper by a continuous bobbin carrier and aligned and stacked into a guide chamber where each bobbin is held by two holders.

The guide chamber is positioned over the empty spindle, and the holders guide the empty bobbin into a vertical position to slide down upon the spindle.

For certain types of friction-drive spindles and tubes, an auxiliary arm taps the top of the tube to force it down into its running position.

The guide holding the lappets and thread guides out of the way releases them to normal position.



The foregoing operations take place in about ½ sec.

When the unit reaches the end of the frame, a limit switch on the rail releases the full-bobbin box and a reversing clutch automatically brings the unit back to its starting position.

(Circle T-30 on Reader-Service Card)

Combination Gate-Plug Valve

A 1-in. valve with the combined advantages of a gate valve and a plug disk valve has been introduced by Crane Co., 836 S. Michigan Ave., Chicago 5, Ill.

The valve has: screwed ends; a tapered nonturning plug disk; handwheel attached to yoke sleeve; reduced seat and fine stem threads for accurate flow control; O-ring bonnet joint; and is rated at 1,500 psi. for water, oil, or gas. The valve is very resistant to corrosion and erosion. **(Circle T-24 on Reader-Service Card)**

Nylon Strainers

Nylon-bag strainers suitable for many industrial straining jobs are available from Fast-Flo Corp., 1707 Kings Highway, Brooklyn 29, N. Y. Supplied in 18x35- and 13x15-in. sizes, the bags are made from 20-, 40-, and 80-mesh nylon fabrics to suit a variety of straining needs. Special sizes or shapes can be ordered. **(Circle T-25 on Reader-Service Card)**

Improved Fluorescent Lamp

A 40-w. fluorescent lamp that lights all the way to the electrical contact pins has been announced by Westinghouse Electric Corp., Bloomfield, N. J. The lamp increases light output 21% over Westinghouse lamps now in use.

This rapid-start lamp produces 3,200 lumens in comparison with 2,650 lumens of the present cool-white lamps.

This improvement will also be used on Westinghouse's high-output lamps. A high-output cool-white lamp 96 ins. high will produce 9,000 lumens as compared with the present 7,300 lumens. **(Circle T-26 on Reader-Service Card)**

CONTINUED ON PAGE 162

Save MATERIAL! Save TIME!

get MORE PRODUCTION

from your tenter frames . . .

GPE Controls

CLOTH GUIDE

Run tenter frames and other production machinery faster . . . and turn out better work. GPE Controls Cloth Guide lets you pin or clip more accurately, more surely . . . actually improves product quality while you cut production costs. Get the facts about this inexpensive way to modernize old equipment and insure top production from new equipment.

- for jobs of any size . . . smallest to largest
- most accurate tenter frame control
- completely non-contact . . . nothing touches the cloth
- ideal for all kinds of cloth, from the lightest scrims to the heaviest woolens.
- adaptable to any kind of machine
- air-sensing or photoelectric models . . . all with simple, low-cost hydraulic power
- the only cloth guide made by automatic control experts

Mail coupon for the FACTS

GPE Controls — A GENERAL PRECISION COMPANY

GPE Controls, Inc. (Subsidiary of General Precision Equipment Corp.)
274 East Ontario Street, Chicago 11, Illinois

Send me FACTS about GPE Controls cloth guides. I am interested in controlling .....(make of tenter frame) or a ..... (other type of machine).

Name..... Title .....

Company.....

Address.....

City..... Zone ..... State .....

NEW LITERATURE

TEXTILE MACHINERY & AUXILIARY EQUIPMENT

Spindles for every purpose—Illustrated technical folder gives specifications, applications, and advantages of New Era, top-suspension-drive, ring-brake roller-bearing, and ball-bearing spindles. Replacement Parts Div., Saco-Lowell Shops. **(F-1)**

Size applicator—Leaflet describes improved size applicator that holds selvage ends in place, reduces loom stops, and automatically controls squeeze-roll pressures according to slasher speed. Ira L. Griffin & Sons. **(F-2)**

Thinline motors — For limited-space applications and rated at 1 to 5 hp. are described in 8-p. booklet. Operating mechanism is totally enclosed. General Electric Co. **(F-3)**

Engineered humidification—And the Humiduct system are described in illustrated bulletins that picture actual mill installations and give full technical details of construction and operation. Bahnson Co. **(F-4)**

Electronic air cleaner—Product bulletin covers the operation and specifications of the Rollotron cleaner, which offers in one space-saving unit the advantages of electrostatic precipitation and disposable-media air filters. American Air Filter Co., Inc. **(F-5)**

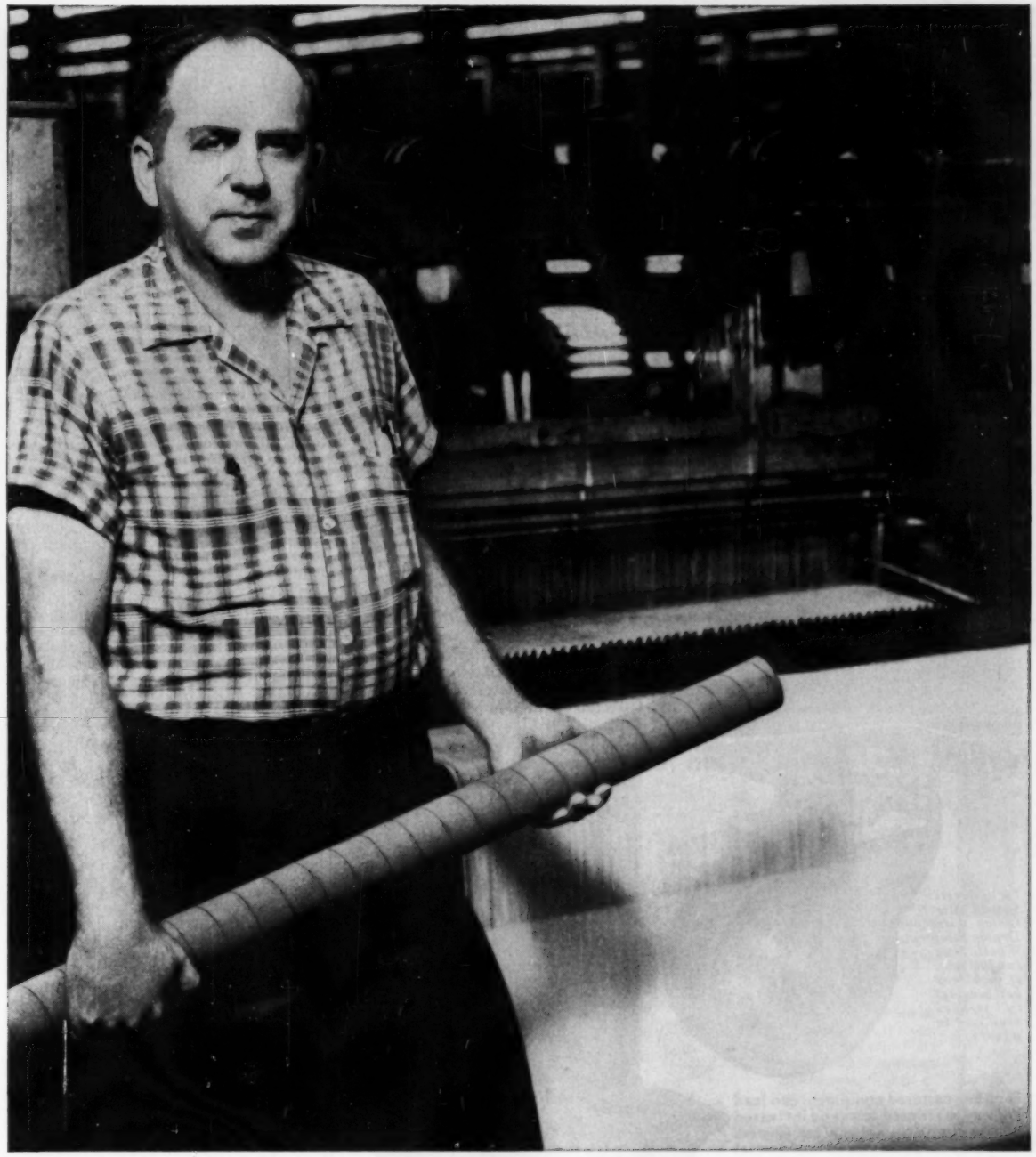
Roll-up attachment for ribbon looms—Is described in release that tells how the apparatus cuts out six or more production steps, increases weaving efficiency 10%, and increases work assignments 25%. Fletcher Works, Inc. **(F-6)**

Spike-apron-feeder magnet—That eliminates tramp metal in processing lines of wet or dry fibers and extends card- and garnett-clothing life four to five times that of previous limits is described in release from Magni-Power Co. **(F-7)**

Abrasion, shearing, and stiffness testers—Are described in three illustrated bulletins that give specifications, applications, and prices of the machines. Taber Instrument Corp. **(F-8)**

Continuous feeders—For use on pickers, dusters, lumpers, openers, shredders, willows, bur pickers, and other cleaning and blending machines are described in technical bulletin that gives specifications and applications for Types 235 and 565 Bramwell machines. Geo. S. Harwood & Son, Inc. **(F-9)**

"Facts About Steel Rolls"—Illustrated booklet discusses hardening, reconditioning, renecking, fluting, and ordering steel rolls for roving and spinning. Replacement Parts Div., Saco-Lowell Shops. **(F-10)**



Reduce fabric creasing with this loom press roll covering

Here's a loom press roll cover that practically eliminates the most common cause of fabric creasing — uneven maintenance of take-up roll tension. It's Armstrong Accotex DK-149.

This covering is a resilient blend of sponged rubber and cork. It has a high-friction, non-marking surface that holds the fabric snugly against the full width of the take-up roll. DK-149 can't pack down or develop high spots. It won't let the cloth slip or run unevenly and thus allow creases to develop.

DK-149 comes in handy ribbon form for quick, easy application. Try it on several of your looms. Your Armstrong man will help arrange the test. Armstrong Cork Company, 6908 Dauphin Street, Lancaster, Pa.

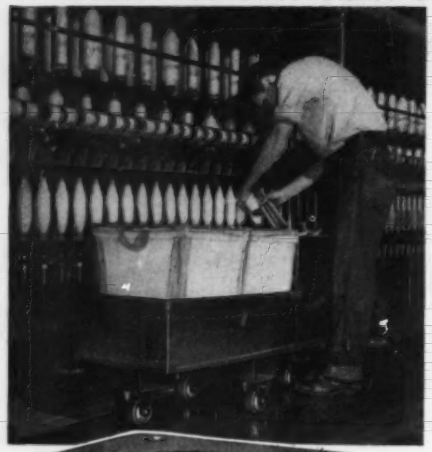
Armstrong LOOM SUPPLIES

TAKE-UP ROLL COVERINGS · CLUTCH DISCS AND INSERTS · TEMPLE ROLL COVERINGS · BRAKE AND LET-OFF STRIPS

CIRCLE 151 ON READER SERVICE CARD 151

NOELTING
Faultless Caster
Materials Handling FACTS

INCREASING TEXTILE PRODUCTION AND DECREASING COSTS AT RUSSELL MANUFACTURING CO., ALEXANDER CITY, ALA.



Advanced engineering methods of servicing over 64,000 spindles at the mills of Russell Mfg. Company have helped them to be recognized as one of the South's most enterprising textile mills. The continuous productive operation of textile machinery depends to a large extent upon keeping the equipment supplied with work materials. Keeping work material on hand and feeding it into the spinning machinery speedily is accomplished at Russell Mills with a combination of integrated trucks. And to assure these trucks a trouble-free, continuous cycle through every phase of mill operation, the Russell executives selected Faultless 504-4TG rigid plate and 1104-4TG Double Ball Bearing Swivel Casters with drawn steel wheels.

1100 Series SwivelCaster shown with Drawn Steel Wheel. Note two full rows of hardened ball bearings in swivel head and in wheel hub.

Faultless castered equipment can lead the way to reduced costs and increased production in *your own plant.* Casters for light, medium, heavy and special duties are included in the extensive Faultless line. Faultless wheels for every type floor and load, as well as for special temperature and chemical conditions, are available.

ASK YOUR DISTRIBUTOR

Your nearby Faultless Industrial Distributor maintains a substantial inventory of Faultless Casters for immediate delivery. He and one of the strategically located Faultless Sales Engineers are available to work with you on every handling problem in your plant. Both are listed in the Yellow Pages of your phone book under "Casters," beneath the Faultless heading.

500 Series with Plaskite Wheel and Thread Guard to keep lint out of bearings, string from winding around axle.

Faultless Caster Corporation
EVANSVILLE 7, IND.
Representatives in Atlanta, Boston, Buffalo, Chicago, Cleveland, Dallas, Detroit, Grand Rapids, Greenville, S. C., High Point, Indianapolis, Los Angeles, New Orleans, New York, Philadelphia, Portland, Seattle, St. Louis, Washington, D. C. Canada: Stratford, Ontario

FAULTLESS SOLVES THE TOUGH JOBS

NEW LITERATURE Continued

Hand tachometers—For testing speed of rolls, shafts, and belts are described in folder that covers technical data, sizes, and prices. Five models are discussed. Jones Motorola Corp. (F-11)

Electronic counters—Condensed catalog describes new line of high-speed electronic counters; also covers standard mechanical and magnetic counters and predetermining and convertible counters. Some of the counters are designed to measure picks, hanks, yardage, etc. by shifts. Veeder-Root, Inc. (F-12)

Cylinder dryers—Catalog sheet describes special features of new Model P vertical drying machine that has stainless-steel cylinders, V-belt drive, and pillow-block bearings. J. E. Carroll & Co. (F-13)

Industrial rolls—Are described in a 48-p. catalog that contains information on construction and care of metal, rubber, wood, and plastic Shaf-Tite rolls. One section tells how to buy rolls. Rodney Hunt Machine Co. (F-14)

Spinning change-overs—Latest issue of "Dixon Data" contains information on double-apron Roth and Casablancas change-overs and explains how the systems are completely oil free and cap-bar free. Construction features of front, middle, and back rolls are illustrated. Dixon Corp. (F-15)

Long-fiber spinning frames—Ten-page bulletin describes drafting system, top-roll suspension, roll weighting, balloon control, bobbin build, and other features of the Arrow long-fiber spinning frame. Roberts Co. (F-16)

Tricot warper—Bulletin describes outstanding features of the TB 53 high-speed warper. Among the features are air doffing of the beam, air-controlled presser roll, electric brakes, differential yarn speed control, and lower carrier roll. Cocker Machine & Foundry Co. (F-17)

Loom drive—That gives maximum pulling power with minimum tension and keeps grease from the clutch is illustrated in bulletin from Bahan Textile Machinery Co. (F-18)

CHEMICALS & SUPPLIES

Iron in process water—Can be dissolved and stabilized by using a chemical-feed system for a sequestrant. The system is described in engineering data sheet that also cites the water-treating experiences of American & Efird Mills. Milton Roy Co. (F-19)

Polymer products—Chemical directory gives specific properties and uses of polyvinyl-acetate emulsions and solutions, styrene-butadiene emulsions, acrylic emulsions and solutions, polystyrene emulsions, sodium-polyacrylate thickeners, polyvinyl alcohols, and polyvinyl-acetate bead resins. Borden Chemical Co. (F-20)

Performance features of TORRINGTON CAM FOLLOWERS

Heavy sectioned outer race to absorb high rolling and shock loads.

Integral stud for cantilever mounting, case-hardened, with tough core for high strength to withstand shock loads.

Easily relubricated at either end or through cross hole in stud. Ends accommodate standard drive grease fittings or plug seals.

Full complement of small diameter rollers for maximum radial capacity and efficient anti-friction performance.

Races precision ground for even load distribution and uniform low end play.

Built to "FOLLOW THROUGH" under high shock loads

Every feature of the Torrington Cam Follower is designed to insure efficient performance and long service life under heavy rolling and shock loads in cam or track follower service.

Precision made throughout, Torrington Cam Followers are available in sizes from ½" to 2¼" OD. Special surface finishes such as chrome and cadmium plate or oxide black can be provided.

Our engineering staff will be glad to work with you in applying these reliable units to your cam-controlled or track-type equipment. You can depend on Torrington Cam Followers to "follow through" on the job because every element is designed for ultimate capacity. *The Torrington Company,* Torrington, Conn.—and South Bend 21, Ind.

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

NEEDLE • SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • BALL • NEEDLE ROLLERS • THRUST

CIRCLE 153 ON READER SERVICE CARD 153

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Ask the man from S-W . . .

. . . about the excellent wear-resistance qualities of **MICROROK** covers. Heat resistance this cover offers, too, up to 180°F. PPadder, Mangle, Washer, and Carbonizer Rolls give long service life when their covers are **MICROROK.**

Literally thousands of **MICROROK** Rolls are proving daily that they are the most versatile hard rolls in use today. This and other factors mean cover longevity which you may not be getting. Ask your S-W man for the facts.

HAVE YOU LOOKED INTO THE

- Uniform Extraction
- Uniform Penetration
- Long Life — measured in years

MICROROK® combines the best properties of metal rolls with the best properties of rubber rolls. It combines hardness and smooth finish with the resiliency of rubber. It gives outstanding life between grinds, thus reduces your maintenance costs. Microscopic depressions in the surface, which looks mirror-like, aid in gripping fabric and preventing slippage.

Write for your copy of the MICROROK Data Page.

S-W INC.

STOWE-WOODWARD, INC.

Newton Upper Falls, Mass.
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on the West Coast
HUNTINGTON RUBBER MILLS, INC.
Seattle, Washington • Portland, Oregon
Port Coquitlam, British Columbia, Canada

MICROROK
MICROROK

Acid fulling and scouring—Technical data and suggested applications for Sterox 21K, a new surfactant specifically designed for use as an acid fulling and scouring agent for woolen fabrics, are available in a booklet from Inorganic Div., Monsanto Chemical Co. (F-21)

Radioisotopes—Brochure explains how radioisotopes can be used to provide optimum quality control in process operations. Operating characteristics and applications of nuclear gauging systems are also discussed. Radiation Counter Laboratories, Inc. (F-22)

Silicone products—Used for water repellents and textile finishes are discussed in 8-p. illustrated catalog that covers typical properties, benefits, and uses. Silicone Products Dept., General Electric Co. (F-23)

Nonionic surfactants—Of the Emulphogene BC family, used for wetting, emulsification, dispersion, etc. are described in a technical bulletin that gives properties and uses in considerable detail. Antara Chemicals, General Aniline & Film Corp. (F-24)

Warp size—For spun man-made-fiber yarns is described in technical data sheet that includes detailed information on properties, range of viscosities, and applications from A. E. Staley Mfg. Co. (F-25)

Borohydrides—That selectively and quantitatively reduce the aldehyde groups in oxidized cellulose and keep textile materials from yellowing are described in a 16-p. booklet from Metal Hydrides, Inc. (F-26)

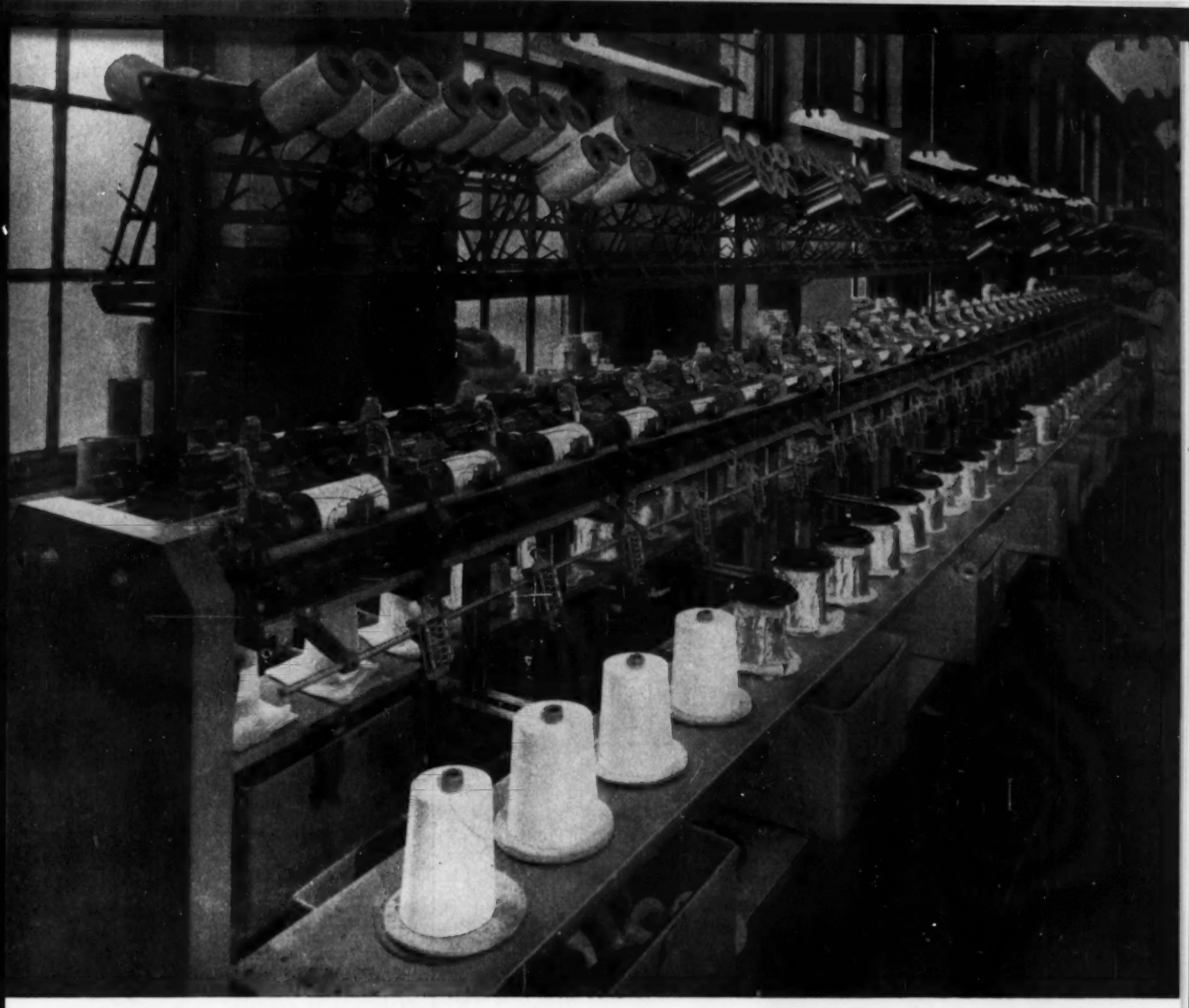
Dyed yarn—"What You Should Know When Ordering Yarn Dyeing or Colored Yarns" is the title of a booklet that provides basic data and suggestions concerning yarn quality, color quality, put-up, storing, shipping, etc. Franklin Process Co. Div., Indian Head Mills, Inc. (F-27)

ENGINEERING & MAINTENANCE

Dry-fluid drives—And other power-transmission machinery are described in a bulletin that gives specifications, operating features, and applications. Other products discussed include bearings, pillow blocks, and speed reducers. Dodge Mfg. Corp. (F-28)

Floor cleaning—"Industrial Floors: How to Clean and Care for Them," is the title of a booklet that covers 50 years of industrial cleaning experience and contains charts, lists of cleaning compounds, and descriptions of cleaning methods. Oakite Products, Inc. (F-29)

Spray-on belt dressing—Booklet tells how Sprazon, an aerosol-applied dressing, can be put on any type of running belt with complete safety and no loss of production. Graton & Knight Co. (F-30)



On this Kidde-Sipp Winder-Redraw

SPOOLS NEVER OVERRUN

You get nothing but uniformly full spools — no overruns and no partially filled spools — with the Kidde-Sipp Winder because the instant a spool is full, it's stopped — automatically. And with one hand your operator can doff it and load again in seconds. These advantages combined with self-threading guides and high running speed mean this: one operator can tend more spindles and turn out more poundage on the Kidde-Sipp Winder than on any other machine. For complete information, write us today.

ONE HAND does it, without touching the yarn . . . operator can doff a full spool in a split second, with a flip of the hand . . . and her fingers never even touch the yarn.

TRICOT AND RASCHEL MACHINES • TRICOT WARPERS • HORIZONTAL WARPERS • BEAMERS
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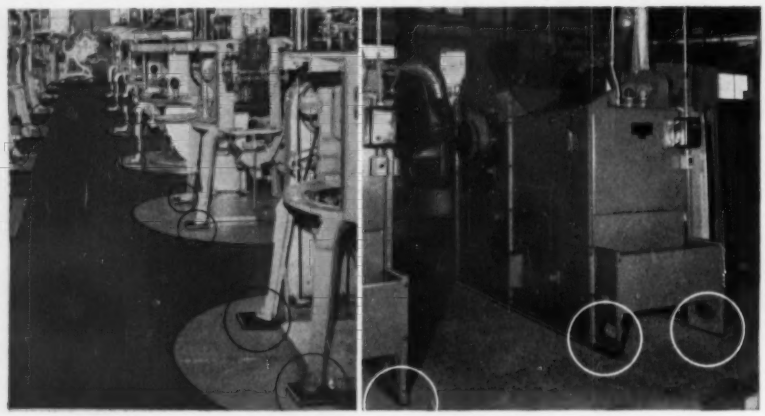
The word KIDDE is the trademark of Walter Kidde & Company, Inc., and its affiliated companies.

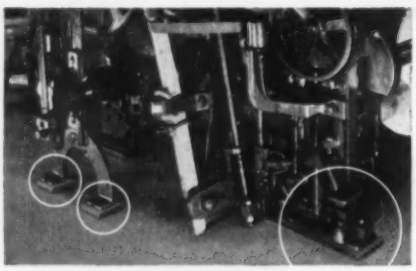
CIRCLE 155 ON READER SERVICE CARD

Leading Textile Mills Report...

UNISORB Cuts Costs Reduces Noise and Vibration



Unisorb pads are used under all types of equipment to save installation time, eliminate lagging and bolting and reduce noise and vibration. Preparatory equipment, Circular Knitting Machines and Looms, as shown here, typify Unisorb installations. Unisorb is the only flexible mount available in variety of grades to suit "vibration personality" of each machine.



Unisorb pads save up to 75% in installation time — just apply cement to pad and set in place. **No danger of "walking"** and machines can be moved any time. Every mill can be made quieter and more efficient.

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Want more information? Send for set of Unisorb "Facts" Books!

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FE8-31

NEW LITERATURE Continued

"Report to Management"—Points out how, when, and where thousands of dollars can be saved through the application of modern lubrication methods. Textile applications are described and actual dollar savings are cited. Lincoln Engineering Co. **(F-31)**

Engineering tables and formulas—Summarizing electrical data, properties of materials, heat and steam information, and measurements are available in 120-p. handbook from Westinghouse Electric Corp. **(F-32)**

Textile-machine lubricator—That automatically services up to 73 bearings on X-2, XD, and XP-2 looms and also can be applied to knitting machines is described in illustrated booklet. Bijur Lubricating Corp. **(F-33)**

Sanitary maintenance — A 20-p. booklet tells how an individually engineered program of sanitary maintenance can be set up to meet your requirements. Custodial work, automatic controls, and follow-through are covered. Puritan Chemical Co. **(F-34)**

Lubricant-selector chart—Makes it easy to select the proper MolyKote lubricant for any extreme-pressure job according to temperature, environment, and method of application. Alpha-MolyKote Corp. **(F-35)**

Mercury switches—Revised catalog gives photographs, dimensions, ratings, application information, and technical data. Micro-Switch Div., Minneapolis-Honeywell Regulator Co. **(F-36)**

GENERAL

Better packaging—A 48-p. catalog containing many suggestion for improving packaging and shipping methods and showing full line of strapping equipment is available from Signode Steel Strapping Co. **(F-37)**

Marking and sealing shipments—A 24-p. booklet tells how to save 25% in sealing cartons with gummed tape and how to stencil packages properly. Conversion tables for weights and export marking data are included. Marsh Stencil Machine Co. **(F-38)**

Cellophane packaging—Brochure describes advantages of cellophane bundling compared with bulky opaque wrapping materials and tells how to stretch packaging and distribution dollars. American Viscose Corp. **(F-39)**

Cotton lift truck—Bulletin describes truck especially designed to handle cotton bales. Features include guards to keep lint out of operating mechanisms and a spark-arresting exhaust system. Hyster Co. **(F-40)**

Air transportation—Folder showing latest route patterns of 13 local-service air lines to 500 communities is available from Southern Airways, Inc. **(F-41)**

"Business Investment Analysis"—A 40-p. book devoted to the nature and

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THE QUICK BELT THAT MINIMIZES DOWN-TIME

Here are four little words that cost you money:
"down for belt replacement" or "down for broken tapes".

If you figure the machine hours saved with Texalon, the new quick belt by Rhoads, you'll never be without it. Texalon is an all-synthetic belting, easily made endless on the job with smooth, strong laps.

Texalon springs without permanent stretch.
Runs smoothly and evenly without slipping.
Resists deterioration under wet or corrosive conditions.

Keeps rolls of Texalon on hand in all desired widths —
1″ to 24″ — to reduce belt changing time to a minimum.
Bulletin on request to J. E. Rhoads & Sons, Wilmington 99, Delaware.

Typical Texalon Applications

TAPES . . No stocking problem for spindle tapes, carrier tapes, or conveyor tapes. New tapes made endless in minutes from roll of Texalon. Laps are scarcely discernible. No bump, no permanent stretch.

CONVEYORS . . Texalon can be made endless without dismantling the conveyor. No slow, tedious vulcanizing. Gives long service life without losing desired tension.

POWER TRANSMISSION . . Replaces woven endless belting, rubber or leather. Ready to be made endless right on the job. Typical applications include grinders, routers, saws, planers, knitting machines, paper mill drives.

RHOADS

Where the Job Selects the Belt . . . Since 1702

158 CIRCLE 158 ON READER SERVICE CARD

use of investment formulas from the rule-of-thumb approach to MAPI forms and charts. Of interest to executives. Machinery & Allied Products Institute. (F-42)

Supervisor development—Is covered in "Supervisory Growth," a comprehensive brochure that contains generous samples of actual motivating material for supervisors. Scope includes the handling of job problems and personal development of textile supervisors. Elliott Service Co. (F-43)

DIRECT SPINNING

CONTINUED FROM PAGE 45

per thousand spindle hours. Other numbers have as few as 18 ends down.

Other operating data for 58s are: total draft 350, back draft 12.5, front draft 27.9, doffing time 8 hrs., creeling time 1 week, twist multiplier 3.35, and turns per inch 25.5. With this yarn number, a 6-0 traveler is used.

Break Factor Is High

The 58s yarn has an average break of 55.4 lbs. Break factor is 3,240, and average size is 58.5s. Size variation ranges from 56s to 62.5s.

Cleaning is done by the spinners, who say that the easily removed drafting components make the job easy to handle. Their only complaint is that they have to stretch somewhat to put the supply cans over the top of the frame.

Work assignments have not yet been determined; but it is believed that operators can easily handle more spindles than the present setup on the old frames because of fewer ends down, less cleaning, and better-running work.

POINTERS FOR SUPERVISORS

CONTINUED FROM PAGE 129

A fifth point is to do your level best, once a job rate is established, to maintain the conditions on which the rate was set. If proper performance of the job is conditioned on the employee's having supplies available, try to see that the supply service is adequate. If a job is to be done by a certain method for quality reasons, try to see that the employees don't short-

CONTINUED ON PAGE 160

THE MAGIC OF *Norgren* MICRO-FOG LUBRICATION

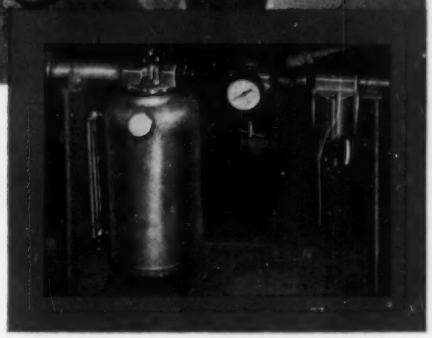
ERWIN MILLS, Inc. Converts One Dry Can Stack . . . then another . . . then a third to NORGREN MICRO-FOG

In the fall of 1957, MICRO-FOG lubrication was installed at Erwin Mills, Inc., Cooleemee, North Carolina, on a stack of 34 dry cans. During the months that followed, results were so outstanding that they decided in April, 1958, to make the same conversion on another stack of 36 dry cans, and then a third applicaton of Norgren MICRO-FOG was made to another dry can stack in July. Total results amounted to big savings in maintenance and lubricant costs, better lubrication for the bearings and *no product contamination.*

If it's Norgren . . . It's Dependable.

C. A. NORGREN CO.

3404 SOUTH ELATI STREET • ENGLEWOOD, COLORADO



MICRO-FOG Lubrication provided these benefits—

- Bearing Failures Eliminated
- No significant bearing wear in 12 months operation
- Bearing temperatures reduced approximately 10° F
- Improved lubrication eliminated uneven bearing drag
- Hand lubrication of bearings ended
- No more lubricant dripping from bearings
- Considerable saving in lubricant and maintenance costs

For complete information about this installation call your nearby Norgren representative listed in your telephone directory—or WRITE FACTORY FOR BLUE-PRINT MF-27.

CIRCLE 159 ON READER SERVICE CARD

For swift sure service

to principal Textile Centers of the Eastern Seaboard and the Midwest,

always specify . . .

TRUCKING McLEAN COMPANY

Our 25th Year of Service 1934-1959

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TEXTILE DIVISION OFFICES TO SERVE YOU—

- Baltimore
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For "know-how" service on truck loads *or less*, call McLean today, or write Dept. A, Box 213, Winston-Salem, N.C.

McLean also manages and operates Hayes Freight Lines, Inc., serving the Central States

POINTERS FOR SUPERVISORS

CONTINUED FROM PAGE 158

cut it for a temporary gain in earnings. If package weights are a factor in the rate, try to see that they are kept at prescribed levels.

Occasionally, circumstances beyond the supervisor's control will result in off-standard condition. If the supervisor is alert to these developments when they occur, he can call them to the attention of the proper people and possibly arrange for their correction so as to avoid the necessity of a rate adjustment.

A final point—and this is closely related to the first—is that the supervisor should always support the incentive system. This is not to say he should condone mistakes in facts or obvious errors in judgment. When these occur, and human frailty practically assures they will occur from time to time, the supervisor should work with his associates in the management organization to bring about correction.

In many, perhaps most, textile companies the incentive system is integral to a successful operation. A supervisor does himself and his company harm if, when an employee complains about a rate or says his workload is too large, he says to the employee, "You're right, but what can I do about it? These standards men don't know what they're doing."

This kind of attitude undermines the system, no matter how well conceived and administered, by undermining the confidence of employees in the objectives of management and the treatment they are to receive. So support the system to the best of your ability in your relationships with employees.

Successful, fair administration of wage incentives requires close teamwork between supervisors and standards or timestudy men. To the extent that a supervisor can improve that teamwork he is rendering a real service both to his management and to the employees under his direction.

OVERGINNED COTTON

CONTINUED FROM PAGE 51

factor. There was little correlation between this factor and the processing characteristics of the cotton.

Neps per 100 sq. ins. of card web gave some indication of the effect of ginning treatments, but the increase resulting from the use of any particular practice did not adequately reflect processing performance. The nep level for all lots ranged from 10 to 23.

Work Assignments Are Affected

Spinning side assignments for processing lots that received minimum cleaning and were dried only to moderate levels were greater than for lots subjected to the maximum treatments. This relationship held true in manufacturing both 30s and 40s yarn. The differences were more pronounced in spinning the finer yarn.

Drying to a very low lint-moisture content exerted the greatest influence on spinning performance; overhead cleaning and lint cleaners had some effect. With elaborate overhead cleaning, overdrying reduced the number of sides assigned by almost 50% for 40s yarn.

As in the case of spinning, overdrying in combination with elaborate overhead seed-cotton cleaning resulted in changes in the cotton that necessitated major reductions in number of looms assigned per weaver. The use of lint cleaners accounted for further reduction at both high and low moisture levels.

Loom assignments in processing lots subjected to elaborate overhead cleaning were significantly lower than assignments in processing lots subjected to moderate amounts of overhead cleaning. With less elaborate overhead seed-cotton cleaning, the effect of lint cleaners was not quite as pronounced on decreased loom assignments when lint moisture content was relatively high.

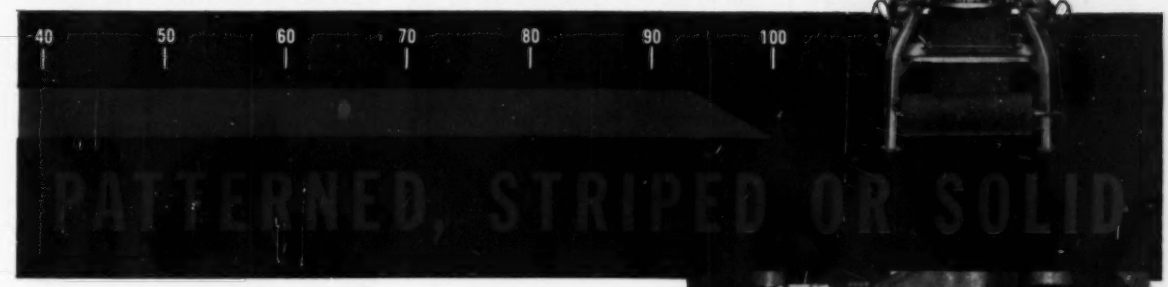
Labor Costs Go Up

With elaborate overhead, the use of two lint cleaners increased spinning labor costs 0.8¢ per lb. of cloth. Weaving labor costs increased 0.6¢ per lb. of cloth.

When elaborate overhead with two lint cleaners was used and lint moisture levels were relatively high, spinning and weaving labor costs were 1.7¢ per lb. of cloth lower than for cloth made from overdried cotton

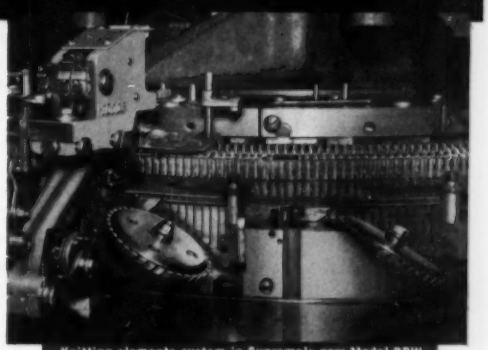
SUPREME BRW

Knits Up To 100 Yards Per Hour!

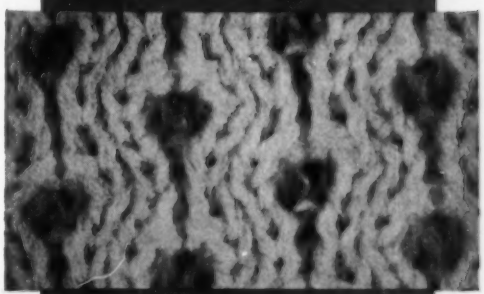


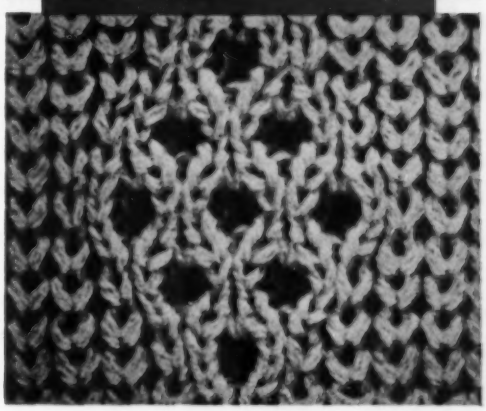
BULKY SWEATER FABRICS

- **PATTERN WHEELS ON ALL FEEDS AND STRIPING BOXES ON ALTERNATE FEEDS GIVE YOU UNPRECEDENTED BULKY KNITTING FLEXIBILITY at 5 to 20 times the output of previous models.**
- Knits 1 x 1 Rib and Half Cardigan bulky sweater and outerwear strips . . . in an infinite variety of Multi-Color Designs, Self-Patterns, Solids, Automatic Variable Stripes, Textures and Combinations . . . maximum production rate of 1 strip per minute — 100 yards per hour.
- Standard 30" diameter machine has from 3 to 7 cut cylinders and dials — 16 feeds with 4 color striping boxes on alternate feeds — (Each of the 8 boxes is individually and automatically controlled for maximum selection without production loss) — Pattern wheels on all 16 cylinder feeds — Automatic tuck controls on all 16 cylinder and dial feeds permit automatic switch from half cardigan to 1 x 1 cuff stitch.
- Produces body and sleeve strips with attached trims and ***easy, clean-selvage draw thread separations.*** Unique method eliminates welt, resulting in yarn savings and cloth more suitable for brushing.
- Independent tight and loose controls give desired structure and elasticity on body as well as cuff or waist.
- Handles up to 3 ends of 2/18 W.C. yarn. Has revolving yarn stand ***with stationary, rubber-covered take-up.***
- **For a look at the BRW in action — contact Supreme today or Morris Kaplan Co., Exclusive Sales Agent To The Sweater Trade, 932 Madison Street, Brooklyn, N. Y.**



Knitting elements system in Supreme's new Model BRW has easy-to-set pattern wheels and striping boxes





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BX-193

SEAMLESS!
SNAG-FREE!

Now you can get Diamond Fibre Roving Cans in the big 16" and 18" diameters from regular stock at the Spartanburg plant-warehouse.

Static-free rolled fibre top rim for running synthetics; one-piece steel top rim; or swedged top rim—these meet all roving requirements.

CDF Diamond Fibre Roving Cans are smooth, strong, long-lived. Their interior surface, like porcelain, resists cracking and softening—won't snag yarns.

Make the CDF Spartanburg warehouse (834 Hayne Street, Spartanburg, S.C.—Tel. 3-6397) your headquarters for fibre and Celoron loom parts, gears, trucks, and mill boxes. Call Spartanburg or write for CDF Receptacles Catalog.

CDF CONTINENTAL-DIAMOND FIBRE
A Subsidiary of The Budd Company
Newark 55, Del.

processed with the same cleaning machinery. Total difference was about $8.50 per bale of cotton.

At relatively high lint-moisture levels, elaborate overhead machinery added approximately 0.8¢ per lb. in additional spinning and weaving labor costs, compared with moderate overhead cleaning. When this smaller amount of cleaning machinery was operated to produce lint moisture content in the 6% range, the use of lint cleaners produced increases of about 0.1¢ per lb. of cloth.

Cloth Costs 2.5¢ per lb. More

Overdried cotton ginned with elaborate seed-cotton cleaning and double lint cleaning cost 2.5¢ per lb. of cloth more in direct spinning and weaving labor costs than cotton ginned on moderate overhead-cleaning setups with two lint cleaners and high lint moisture.

This fact is of particular significance when it is considered that the grades received by the producer were identical, the equivalent of Middling minus. Of special significance also is the fact that the value of the cloth in the finished state was not equal.

The test lots ranged from Low Middling to Middling in grade and had a difference in market value of $35.95 per 500-lb. gross-weight bale. This difference was reduced to about $31.65 per bale when weights were adjusted for bagging, ties, and manufacturing waste.

An evaluation of cloth, both in the gray and dyed stages, revealed that rankings varied irregularly with differences among lots subjected to different treatments in respect to moisture and number of lint cleaners used in both elaborate and moderate overhead-cleaning groups. The lots of cloth, ranked from 1 to 4 in the gray state, were almost identical in quality and value. There was not more than 0.25¢ per yd. difference in the highest- and lowest-ranked gray goods.

In the dyed state, cloth defects were more noticeable; lots ranked from 7 to 12 were unsuitable for usual print-cloth outlets. Significantly, five of the top-ranked six lots were made from cotton ginned with moderate overhead cleaning and at relatively high moisture levels.

The net combined cost to the mills for cotton available for cloth, including direct spinning and weaving labor costs, was less for the lower grades.

Middling-minus grades produced with moderate overhead, two lint cleaners, and relatively high moisture, ranged from 1 to 2¢ per lb. of cloth cheaper than equivalent grades produced with elaborate facilities. The paradoxical situation is that the lowest grades also produced the highest quality goods at the cheapest price per pound of cloth. Therefore the 6¢ per lb. differential in favor of the lower grade is even greater if the value of the finished product is taken into consideration.

EQUIPMENT & SUPPLY NEWS

CONTINUED FROM PAGE 149

Shuttles in New Sizes

A wider range of sizes in its Tru-Mold shuttles is available from Draper Corp., Hopedale, Mass. The new sizes are for both Draper and C&K looms.

Specifications:

Shuttle length	16½ through 18½ ins.
Shuttle width	1¾ through 2 1/16 ins.
Shuttle height	No limitation
Opening width	1 7/16-in. minimum
Opening length	9¾-in. minimum (for 8- or 8¾-in. bobbin with tension eye)
Tip offset	18½-in. length (central to 5/32-in. maximum) Under 18½-in. length (no restrictions)
Tips	Sharp, semiblunt, or blunt
Eyes	Any standard eye
Springs	Single- or double-bolted spring cover

(Circle T-27 on Reader-Service Card)

Downtime Recorder

A 30-channel recording instrument that shows the exact time a machine stops and starts has been announced by Fabrionics Corp., Box 521, Huntington, N. Y. An accessory that shows why the stoppage occurred is also available.

Called the Watchman, the instrument can be connected to almost any kind of production machine through individual channels. When a machine stops, the recorder draws a straight line on the paper until the machine starts up again. The length and number of straight lines indicate machine efficiency, operator efficiency, over-all efficiency, and total defects during a

given period.

A push-button control is available with five buttons representing specific defects. When a shutdown machine is started up again, the operator pushes a button corresponding to the defect and a mark is made at an appropriate place on the paper tape. This arrangement makes it possible to tally reasons for downtime as well as duration. **(Circle T-28 on Reader-Service Card)**

Multipurpose Lubricant

A premium-quality multipurpose lubricant for a temperature range of 0 to 275° F. has been developed by Keystone Lubricating Co., 3100 N. 21st St., Philadelphia 32, Pa.

Known as No. 88, this lubricant can be used in 90% of all ball-bearing and roller-bearing installations. It also gives good results in plain bearings and needle bearings and on rotating and sliding surfaces.

The high-film-strength lithium-base product has excellent water-repellent properties so that it is unaffected by damp atmospheres or direct contact with water.

The lubricant is available in 1- and 7-lb. cans, 25-lb. pails, 120-lb. kegs, and 400-lb. drums. Cases contain 12 1-lb. or 6 7-lb. cans. **(Circle T-29 on Reader-Service Card)**

Industrial Shears

Industrial shears supplied by Acme Shear Co., 100 Hicks St., Dept. IEN, Bridgeport, Conn., have a nonslipping, variable-tension adjustment; and a penny, dime, or screwdriver will easily set the blades so they cut a wide range of materials smoothly. **(Circle T-31 on Reader-Service Card)**

Infrared Spectrophotometer

Routine infrared analyses are possible with a low-cost infrared spectrophotometer marketed by Perkin-Elmer Corp, Norwalk, Conn. **(Circle T-32 on Reader-Service Card)**

Aluminum Elbow

A corrosion-resistant aluminum elbow for insulated pipelines has been announced by General Aluminum Supply Co., 744 Alcoa Bldg., Pittsburgh 19, Pa. **(Circle T-33 on Reader-Service Card)**

Reinforcing Resin

An electrical-grade reinforcing resin to increase hardness, stiffness, flex life, and abrasion resistance of rubber stock for electric wire and cable has been developed by Chemical Div., The Goodyear Tire & Rubber Co., Akron 16, Ohio. **(Circle T-34 on Reader-Service Card)**

Glass Treating Baths

Good visibility of samples and very close control of treating temperature are possible in a series of treating baths marketed by American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md. **(Circle T-35 on Reader-Service Card)**

Reproduction Film

Durable and clearly defined photographic reproductions of engineering designs can be made rapidly and easily with a reproduction film announced by E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del. **(Circle T-36 on Reader-Service Card)**

Renewable-Media Air Filter

An automatic renewable-media air filter has been introduced by American Air Filter Co., Inc., Louisville, Ky. The modular design cuts installation time in half, permits easier storage on the job site, and does not require rigging for installation. **(Circle T-37 on Reader-Service Card)**

Tape Dispenser

Sealing tape from 1½ to 4 ins. wide is dipensed in any desired length from the Model 98 Dual-Length Tavper marketed by Nashua Corp., Nashua, N. H. **(Circle T-38 on Reader-Service Card)**

Polyethylene Aspirator

Corrosive filtrates have no effect on an aspirator made of polyethylene now available from Fisher Scientific Co., 425 Fisher Bldg., Pittsburgh 19, Pa. **(Circle T-39 on Reader-Service Card)**

Laboratory Ovens

Mechanical convection ovens, with stainless-steel interiors, that insure

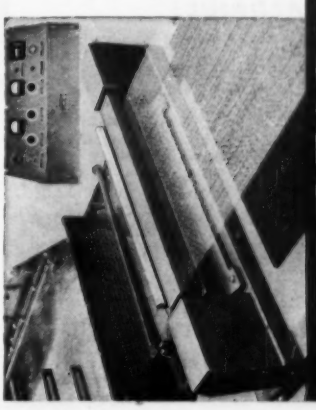
Fabrionics

FABRIONICS WARP YARN MONITOR

- AUTOMATICALLY DETECTS DEFECTS IN YARN DURING WARPING
- ELECTRICALLY COUNTS DEFECTS ABOVE PRE-SELECTED SIZE
- FOR COTTON — WOOL — AND SYNTHETIC YARNS
- STOPS WARPER FOR REMOVAL OF OBJECTIONAL DEFECTS
- FAIL-SAFE CONTROL INSURES CONSTANT SENSITIVITY
- DETECTS DEFECTS AS SMALL AS A SINGLE BROKEN FILAMENT

The Warp Yarn Monitor is placed to the rear of a warper at which point the yarn is condensed into a flat sheet and it is drawn over alsimag or hard chrome plated steel rods and photo-electrically inspected. The Fabrionics Warp Yarn Monitor is an electronically controlled monitoring device which automatically detects imperfections in yarn above a pre-selected magnitude, simultaneously counts them and stops the warper to permit their removal. The Liner Discriminator model detects and differentiates *length* as well as *diameter* defects.

NOTE: Free literature and complete catalog on quality control instruments and devices are offered by the Fabrionics Corporation. Write to the FABRIONICS CORPORATION, P.O. Box 521, Dept. H, Huntington, L. I., New York. *Patents Pending*



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GARLAND

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It wears longer!
It gives higher efficiency...by test!

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MANUFACTURERS OF PLASTIC & RAWHIDE LOOM PICKERS • SPONGE LEATHER BUNTERS • LEATHER PRODUCTS • ROD LUBRICANT • NYLON AND RAWHIDE HAMMERS & MALLETS

50 WATER STREET • SACO, MAINE

automatic constant temperatures at low cost are available from Blue M Electric Co., 138th and Chatham Sts., Blue Island, Ill. (Circle T-40 on Reader-Service Card)

Sealless Pump Units

Three models of plastic, self-priming, sealless units for pumping liquids have been announced by Vanton Pump & Equipment Corp. Div., Cooper Alloy Corp., Hillside, N. J. (Circle T-41 on Reader-Service Card)

Circular Slide Rule

A circular pocket-size slide rule that performs simple calculations accurately has been introduced by General Industrial Co., 5738 Elston Ave., Chicago 30, Ill. (Circle T-42 on Reader-Service Card)

Spherical Bearing

A spherical bearing that will hold up to 20% of its own volume in oil has been announced by Heim Co., Fairfield, Conn. (Circle T-43 on Reader-Service Card)

Nylon Cylinders

Nylon cylinders for roll covers up to 21 ft. long and 16 ins. in diameter are available from Polymer Corp., Reading, Pa. (Circle T-44 on Reader-Service Card)

Acid-Liquor Dialyzers

A dialysis system that will separate acids from acid-bearing liquors has been announced by Graver Water Conditioning Co., Inc., 216 W. 14th St., New York 11, N. Y. (Circle T-45 on Reader-Service Card)

Busway

A 225- to 1,000-amp. busway for indoor use as a plug-in or feeder system has been announced by General Electric Co., Distribution Assemblies Dept., Plainville, Conn. (Circle T-46 on Reader-Service Card)

Plastic Floor

A plastic flooring that offers high resistance to chemicals, abrasion, greases, and oils is being marketed by American Metaseal Corp., 607-609 65th St., West New York, N. J. (Circle T-47 on Reader-Service Card)

Floor Treatment

A floor treatment that seals, hardens, and dustproofs concrete floors, both old and new, is available from Monroe Co., Inc., 10,703 Quebec Ave., Cleveland 6, Ohio. (Circle T-48 on Reader-Service Card)

Turntable

A hydraulically operated turntable that permits closer spacing of rollers at point of transfer and easy flow of material has been announced by Sage Equipment Co., Inc., 30 Essex St., Buffalo 13, N. Y. (Circle T-49 on Reader-Service Card)

Fluorescent Lamp

A fluorescent lamp with lighting characteristic resembling that of light from the moderately overcast north sky has been introduced by Lustra Corp. of America, 32-33 47th Ave., Long Island City, N. Y. (Circle T-50 on Reader-Service Card)

Dial Balance

A torsion balance with a graduated dial that can be turned without arresting the oil-damped balance and is said to save 60% of weighing time is announced by Torsion Balance Co., Clifton, N. J. (Circle T-51 on Reader-Service Card)

Flame-Detecting Unit

A tube that makes possible the practical use of invisible ultraviolet rays in flame-detection applications is available from Minneapolis-Honeywell Regulator Co., 2747 Fourth Ave., S., Minneapolis 8, Minn. (Circle T-52 on Reader-Service Card)

Counter

Automatic count control of operations of high-speed machinery, pack-

aging and batching of parts, cartons, bottles, cutting of stock to exact lengths, timing, and liquid metering is possible with a counter made by Hobson Miller Machinery Corp., 280 LaFayette St., New York 12, N. Y. **(Circle T-53 on Reader-Service Card)**

Electric Actuator

Automatic or remote manual positioning for throttling control of many types of valves, dampers, louvers, metering pumps, and speed changers is possible with an all-electric actuator from Conoflow Corp., 2100 Arch St., Philadelphia, Pa. **(Circle T-54 on Reader-Service Card)**

Recorders

Measurements of pressure, flow, and other variables can be accurately indicated and recorded by an instrument manufactured by Leeds & Northrup Co., 4939 Stenton Ave., Philadelphia 44, Pa. **(Circle T-55 on Reader-Service Card)**

Pneumatic-Tire Lift Trucks

Several lift trucks with pneumatic tires have been released under the name of Challenger by Hyster Co., 2902 N. E. Clackamas St., Portland 8, Ore. **(Circle T-56 on Reader-Service Card)**

Crosscut Slitter

Two slitting machines made by Appleton Machine Co., Doven Div., Appleton, Wis., are set at right angles and produce individual packages from sheer materials in rolls. **(Circle T-57 on Reader-Service Card)**

Pressure Regulator

A regulator pilot valve that responds to minute changes in vapor or liquid pressures has been marketed by Atlas Valve Co., 28 South St., Newark 5, N. J. **(Circle T-58 on Reader-Service Card)**

Instantaneous Water Heater

A series of instantaneous water heaters designated Type W-100 and suitable for many water-heating requirements are available from American-Standard, Industrial Div., Detroit 32, Mich. **(Circle T-59 on Reader-Service Card)**

Laboratory Sinks

Sinks molded into integral units from plastic and plywood are highly corrosion resistant and able to withstand temperatures up to 300° F.; they are made by Ceilcote Co., 4924 Ridge Rd., Cleveland 9, Ohio. **(Circle T-60 on Reader-Service Card)**

Polymer Linings for Tanks

Tanks made of wood, steel, or other materials can be lined with corrosion-resistant polyvinyl chloride or solvent-resistant polyethylene liners supplied by Wendnagel & Co., 600 W. Cermak Rd., Chicago 16, Ill. **(Circle T-61 on Reader-Service Card)**

Box-Tying Machine

Stacks of boxes up to 34 ins. high can be tied automatically by a machine developed by B. H. Bunn Co., 7605 Vincennes Ave., Chicago 20, Ill. **(Circle T-62 on Reader-Service Card)**

Diffraction Grating

Film replicas of diffraction gratings with 13,400 lines per inch are offered by Edmund Scientific Co., Barrington, N. J. **(Circle T-63 on Reader-Service Card)**

Lubrication Alarm System

An alarm system that is activated if the flow of lubricant through the unit is interrupted for any reason and is usable with any viscosity oil or synthetic lubricant and for pressures up to 10,000 psi. is announced by Manzel Div. of Houdaille Industries, Inc., Buffalo, N. Y. **(Circle T-64 on Reader-Service Card)**

Control Valves

Announcement of an antirepeat, press control system that is said to make accidental repeat operation on single-cycling machines almost impos-

If you're interested enough to weigh Bristol as your new industrial home, you can select an actual site for your new plant or expansion. Bristol's campaign for new industry leaves nothing to the imagination as do so many efforts of communities less experienced in living with industry than Bristol.

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DURANT

MODEL "T" LINEAL COUNTER

furnished with **MOUNTING BRACKET** *for* **CONSTANT ACCURACY**

and perfect alignment of measuring wheels

Even at high speeds, the Durant Model "T" lineal measuring machine will accurately measure fabrics in feet, yards, or yards and ⅛ths. Two wide, 18-inch measuring wheels assure accurate measuring and longer life. The hinged and swiveled bracket allows wheels to ride perfectly flat on the material at all times.

- **Easy to Read and Operate —** The counter may be set to turn either clockwise or anti-clockwise, and will subtract when run in reverse. Bold, black figures are large and easy to read; fractional wheel numbers are in red. An easy to reach reset knob returns figures to zero with one turn.
- **Fast, Easy Mounting —** The mounting bracket, which is exclusive with Durant lineal counters, is furnished to provide quick and completely accurate mounting that will assure perfect measuring. A locking collar on the horizontal shaft allows the machine to be raised from the material when not in use.
- **Sturdy, Long Life Instrument —** All components of the Durant counter are of the highest grade materials to assure years of accurate service under the hardest working conditions. The heavy duty stainless steel 5/16" drive shaft is mounted on high grade ball bearings; large measuring wheels can be cast iron or aluminum, knurled or rubber rimmed; all parts of the counting mechanism are of the strongest, long wearing materials.

Send for catalog specifications of the entire Durant line of lineal counters.

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REPRESENTATIVES IN ALL PRINCIPAL CITIES

sible is made by Valvair Corp., 454 Morgan Ave., Akron 11, Ohio. **(Circle T-65 on Reader-Service Card)**

Transmitter

A pressure transmitter that operates without visual indication and controls a distant indicator, controller, or other electrically operated receiving instrument is announced by Yarnall-Waring Co., Philadelphia 18, Pa. **(Circle T-66 on Reader-Service Card)**

Metering Pump

An automatic metering pump that adjusts pumping rate from zero to full capacity by signals from pneumatic instruments is available from Lapp Insulator Co., Inc., 100 Hall St., LeRoy, N. Y. **(Circle T-67 on Reader-Service Card)**

Heat-Transfer Unit

A heat-transfer unit announced by Tranter Mfg., Inc., Lansing 9, Mich., has a branch inlet that carries steam or other media directly to all portions of the unit. **(Circle T-68 on Reader-Service Card)**

Surface Coating

A tough surface coating for plant floors and walls that is highly resistant to chemical attack, abrasive wear, and weathering has been introduced by Pennsalt Chemicals Corp., Three Penn Center, Philadelphia 2, Pa. **(Circle T-69 on Reader-Service Card)**

Vacuum-Operated Sampler

Most liquids and some powdered solids can be sampled from containers by means of a vacuum pump available from W & W Mfg. Co., P. O. Box 9311, Chicago 90, Ill. **(Circle T-70 on Reader-Service Card)**

Transistorized Computer

A medium-scale transistorized computer that can do eight separate data-processing and scientific-computation jobs simultaneously at high speeds has been announced by Minneapolis-Honeywell Regulator Co., 2747 4th Ave. S., Minneapolis 15, Minn. **(Circle T-71 on Reader-Service Card)**

Carton Sealer

An automatic sealer for gummed tape that performs while corrugated-paper cases travel up hill is announced by General Corrugated Machinery Co., Palisades Park, N. J. **(Circle T-72 on Reader-Service Card)**

Pliability Tester

An instrument to accurately measure quantitatively the pliability of products such as greaseproof, waterproof, and water-vaporproof barrier materials has been announced by American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md. **(Circle T-73 on Reader-Service Card)**

Multiconductor Cable

A multiconductor cable that contains from 6 to 56 pairs of thermocouple conductors and can be installed in conduit, without conduit, in open troughs, or in raceways is announced by Thermo Electric Co., Inc., Saddle Brook, N. J. **(Circle T-74 on Reader-Service Card)**

Grease Cup

An automatic grease cup for all plain or antifriction bearings that eliminates the guesswork of when and how much to grease is announced by Lubriquipment Engineers, Inc., P. O. Box 9194, Fort Worth 7, Tex. **(Circle T-75 on Reader-Service Card)**

Dry Acid Cleaner

A dry product based on sulfamic acid and designed to be used in descaling metal surfaces in heat exchangers, vats, and air-conditioning equipment is available from Acid Div., Lee, Revere & Van Buren Chemical Co., 432-8 W. 70th Terrace, Kansas City 13, Mo. **(Circle T-76 on Reader-Service Card)**

1 **MANAGEMENT, SALES AND USERS**—heartily approve THILCO-TUF'S over-all trade-mark product identification!

2 **MANUFACTURING**—praises THILCO-TUF'S exclusive non-staining protective qualities!

3 **SHIPPING DEPT.**—Acclaims THILCO-TUF's ease of handling — time, labor and materials saved over costlier double wraps!

Zimmerman of Philadelphia knows fine upholstering fabrics to be sure. Now, thanks to THILCO-TUF, this leading textile company also knows how to better protect their products and save money doing it! If you haven't yet explored the cost control opportunities this protective wrap offers, read these facts carefully. THILCO-TUF is a duplex type single wrap featuring two sturdy kraft outer sheets bonded together with an exclusive blond laminant which *does not stain*! It is tough, pliable and extremely resistant to punctures, tears, moisture, grease and oils. THILCO-TUF comes in standard grades, reinforced, and/or poly-coated to meet every protection requirement, and eliminates completely the need for costly double wraps. Better check it for your products today.

Just Look at These "Customized" Sales Advantages:

- Provide brand name identity through entire distribution sequence
- Help trade-up product's quality
- Add colorful eye and buy appeal
- Increase prestige value
- Stimulate repeat orders
- Reduce labeling and packaging costs
- Simplify inventory control
- Eliminate "look-alike" competition
- Provide low cost "traveling" advertising

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Thilco has a full range of textile wraps

Thilco's complete line of Textile Papers includes lightweight Krafts, tissues and other wraps in numerous weights and grades in single and duplex combinations. ALL THILCO PAPERS CAN BE PRINT-DECORATED for Brand Name identification and promotional advantages.

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Electrical Trouble Shooting in Distribution Systems

Trouble in an electrical-distribution system is generally caused by grounds, shorts, and opens.

A ground is an electrical connection between the wiring of the apparatus and its framework. A short circuit is a connection that bypasses part or all of an electric circuit. An open is a break in the continuity of the circuit.

This trouble usually shows by: failure of a device to operate, blown fuses, an indication on the ground-detecting apparatus, smoke, or an overheated cable.

Shorts and Opens Are Found Easily

Shorts and opens are relatively easy to locate and are indicated by blown fuses and voltage failure respectively. On the other hand, grounds are generally located by the process of elimination unless they are accompanied by a short or open.

The grounded circuit can be determined by pulling switches one at a time on the distribution panel until the ground-detecting device on the switchboard indicates normal. Closing each switch before the next is opened keeps service interruption to a minimum.

Keep Supply Switches Closed

You should avoid opening switches that supply vital auxiliary equipment until stand-by equipment is placed in operation. If this procedure in locating the ground fails, either the ground is in the generator or more than one ground is present.

Multiple grounds can be located by opening the switches one at a time and leaving them open until the ground detector indicates normal. Then with the grounded switch left open, close the other switches one after the other until another ground is indicated. Leave the switches to the grounded circuits open and continue to test every switch.

How To Find Grounds in Generators

A grounded generator can be identified by transferring the load to another generator and tripping the generator in question from the line. If the generator is grounded, opening its circuit breaker and disconnect switch will cause the ground detector to indicate normal.

Tracking down the actual location of the grounded conductor is done best with a megohmeter, magneto, or battery-and-buzzer set. When these instruments are used, block open the switch to the grounded circuit, remove fuses, and hang a sign over the switch, "Do not close—man working on line."

Tracking down a ground with a megohmmeter is a process of elimination, and it may be used for a ground in the supply cable, starter, motor cable, or in the motor itself. Remove power from the grounded circuits and test the disconnect switch in the motor starter to be sure the circuit is dead.

Megohmmeter Locates Grounds

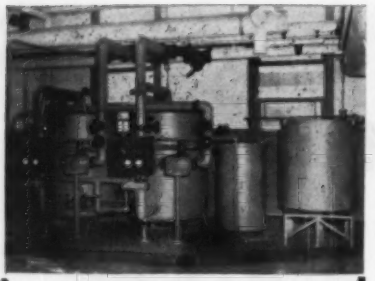
Then test the supply cable by applying a megger between the metal framework of the starter and the top of the switch. A zero reading of the megohmmeter indicates a grounded switch or a grounded cable.

Assume that the cable tests clear, as indicated by the absence of a zero reading. Then make a test between the metal framework and the motor connections of the starter. If a ground is indicated, disconnect the motor leads from the starter and test the starter and motor individually. Grounds within the motor can be located by other tests. *Preventive Maintenance of Electrical Equipment, by Charles I. Hubert, McGraw-Hill Book Co., Inc.*

NEW MAN-MADE-FIBER TABLE

The latest revision of TEXTILE WORLD's Man-Made-Fiber Table will be published next month.

Watch for it in the September issue of TEXTILE WORLD



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CIRCLE 168 ON READER SERVICE CARD

NEWS ABOUT SUPPLIERS

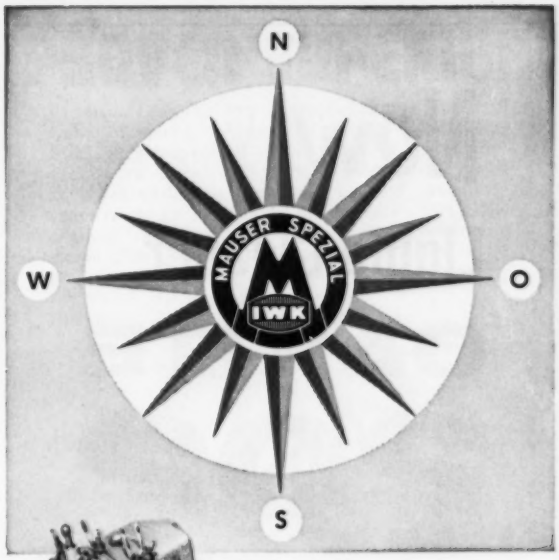
ARKANSAS CO., INC., Newark, N. J.—Has named G. S. Mackey to its sales-promotional division. He will promote Resipon N D C in the New York City area. . . . **APPLETON MACHINE CO.,** Appleton, Wis.—Has established a new research laboratory to test textiles and other materials and to develop improved methods of slitting and winding. It will be operated by the Doven Div. . . . **AMERICAN ENKA CORP.,** New York, N. Y.—Has named Mrs. S. G. Owen apparel-fabrics specialist on the merchandising staff. . . . **MONSANTO CHEMICAL CO.,** St. Louis, Mo.— Has elected C. H. Sommer executive vice president. . . . **PROCTOR & SCHWARTZ, INC.,** Philadelphia, Pa.—Has reassigned its sales and service personnel. The company has also added a regional sales office in Los Angeles, Calif.

FRANK B. GRIMES (left) has been named sales manager for the corrugated-container plant being constructed in Spartanburg, S. C., by Union Bag-Camp Paper Corp. ELMER J. McVEY (center) has been elected vice president of Atkinson, Haserick & Co., Inc., Framingham, Mass. H. ELLIOTT BATSON (right) has been elected president of Louis P. Batson Co., Greenville, S. C.

RAYBESTOS-MANHATTAN, INC., MANHATTAN RUBBER DIV., Passaic, N. J.—Has appointed R. B. Parks assistant sales manager for industrial rubber products and packings. The company has also established a new marketing group section in its sales division. S. J. Synnott has been appointed general marketing manager of industrial rubber products. . . . **BASSICK CO.,** Bridgeport, Conn.— Has opened a new 110,000-sq.-ft. caster-manufacturing plant at Spring Valley, Ill. . . . **VIRGINIA SMELTING CO.,** West Norfolk, Va.—Has named J. P. Duffy to the industrial-sales staff. . . . **WHITING PRODUCTS,** Camden, S. C.—Has named H. L. Short representative in North and South Carolina. . . . **A. O. SMITH CORP.,** Kankakee, Ill.—Has named R R. Heard to direct industrial-sales activities in the New England, Middle-Atlantic and Southeastern territories. C. P. Sell will direct activities in the Great-Lakes area and the central states from Canada to the Gulf.

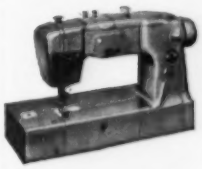
SOUTHERN LOOM DEVELOPMENT CO., Greenville, S. C.—Has signed agreements with Draper Corp., Hopedale, Mass., and Crompton & Knowles Corp., Worcester, Mass., for the latter two companies to sell and service the Hunt let-off on their new looms. Southern Loom Development Co. will continue to manufacture and market the let-off. . . . **C. G. SARGENT'S SONS CORP.,** Graniteville, Mass.—Has appointed D. H. Caldwell Co., Charlotte, N. C., exclusive sales-engineering representative for the states of North and South Carolina, Virginia, and Tennessee. . . . **SACO-LOWELL SHOPS,** Boston, Mass.—Has realigned its Northern sales territories of the Victor Traveler section of the Saco-Lowell Replacement Parts Div. A. H. Moffatt now covers the territory from Massachusetts through Canada with headquarters in Boston. Norman Leach will cover the territory from Delaware to Massachusetts. He also will work out of the Boston office.

H. W. BUTTERWORTH & SONS CO., DIV. OF VAN



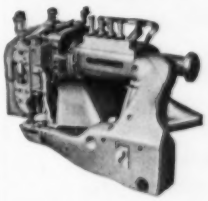
Mauser-Special

Industrial Sewing Machines



owe their international reputation to the precision of all their component parts, as well as to their most accurate assemblage and extremely precise adjustment.

A complete line of various types are manufactured. They are used for all appropriate purposes by manufacturers of hosiery and knit goods as well as clothing, woven goods, blankets and similar materials.



Our manufacturing program includes:

Overlock Machines
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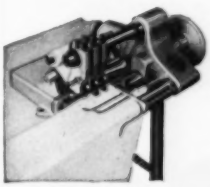
Double Chainstitch Machines
Machines for Sewing Elastics
Border-Attaching Machines
Band-Attaching Machines
Bag Sewing Machines
Cylinder Machines
Feed-off-the-arm Seam-Felling Machines
Flat-Seam Machines
Ribbon Cutting Machines



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A new, "use it everywhere" liquid detergent–Oakite 202–now offers the greatest convenience ever in cleaning. It goes into water solution quickly without waste . . . without fire hazard. You spray, mop or brush it on.

Oakite 202 forms a rich, sudsy solution that's packed with cleaning power. It cuts through grease-soaked lint, scuff marks, oil. Use it throughout your mill. It cleans up grimy concrete, makes wood floors spotless. It brightens painted walls and woodwork; gives lint-laden, oily machinery a new look. It dries down without streaking.

But–best of all–Oakite 202 in mild solutions out-performs strong solutions of other cleaners. This makes it a most economical all-purpose material.

Ask your Oakite man for a convincing on-the-spot demonstration. Or send for free bulletin to Oakite Products, Inc., 42 Rector Street, New York 6, N. Y.

OAKITE
50 1909-1959 SCIENCE
years' leadership in industrial cleaning

NORMAN INDUSTRIES, INC., Bethayres, Pa.—Has appointed the United States Supply Co., Inc., E. Providence, R. I., sales agent in New England. Industrial Heat Engineering Co., Greenville, S. C., has been named sales agent in the South. . . . **SKF INDUSTRIES, INC.,** Philadelphia, Pa.—Has appointed Holton E. Fox district manager of the Philadelphia district sales office. . . . **JOSEPH T. RYERSON & SON, INC.,** Buffalo, N. Y.—Is now stocking and selling Reynolds aluminum in addition to its service on steel. L. T. Beale, head of the steel sheet and strip department, has been named manager of aluminum sales. He retains his former responsibilities. . . . **GREENVILLE STEEL & FOUNDRY CO.,** Greenville, S. C.—Has merged by a stock exchange with Carolina Steel Corp., Greensboro, N. C. Parrott & Ballentine, Greenville, S. C., sales agent for Greenville Steel & Foundry Co.'s textile machinery, will continue to handle textile sales for Greenville Steel & Foundry Div.

BEN N. ANDERSON (left) has been appointed technical-service representative for Chas. S. Tanner Co., Greenville, S. C. DONALD G. ANDREW (center) has been appointed sales representative for the company with headquarters in Providence, R. I. C. LEONARD JOHNSON (right) has been named sales manager of Synthane Corp., Oaks, Pa.

ALLIED CHEMICAL CORP., New York, N. Y.—Has named Herbert Kishbaugh manager of the New York sales branch of the Solvay Process Div. The General Chemical Div. has appointed J. P. Farrell and J. S. Brown vice presidents of the division. G. T. Stribling has been appointed manager of sales for its Baker & Adamson line of laboratory reagents and fine chemicals for the General Chemical Div. . . . **NATIONAL RING TRAVELER CO.,** Pawtucket, R. I.—Has appointed J. T. Greenlaw new Eastern representative. . . . **MILES LABORATORIES,** Elkhart, Ind.—Has formed a new company called Miles Chemical Co. It consolidates into one company the Sumner Chemical Co., Zeeland, Mich., Takamine Laboratory Div., Clifton, N. J., and citric-acid production, Elkhart, Ind.

SHAWINIGAN RESINS CORP., Springfield, Mass.—Has named C. A. Godsell Eastern regional manager. . . . **UNION CARBIDE CORP., UNION CARBIDE CHEMICALS CO.,** New York, N. Y.—Has transferred A. P. Chavent from the Cincinnati, Ohio, district to the Boston, Mass., district. F. N. Wright has been transferred from the Newark, N. J., district to Charlotte, N. C. . . . **HEYDEN NEWPORT CHEMICAL CORP.,** New York, N. Y.—Has formed a new company, Resinera del Tigre, S. de R. L. de C. V., in Mexico, in collaboration with Resina Uruapan, S. A., for the production of gum rosin. . . . **GENERAL MILLS, CHEMICAL DIV.,** Kankakee, Ill.—Has opened a new sales office in Cleveland, Ohio. . . . **EDDA INTERNATIONAL CORP.,** New York, N. Y.—Has named Roy Farr salesman for its Greenville, S. C., district.

E. I. DUPONT DE NEMOURS & CO., INC., Wilmington, Del.—Has named J. J. Barnhardt, Jr., dyes-sales supervisor of the Southern district office in Atlanta, Ga., for the Dyes & Chemicals Div. Dr. W. L. Hyden, who has been closely identified with research on cellophane and textile fibers, has retired. . . . **DOW CHEMICAL CO.,** Midland, Mich.—Has bought a vacant Findlay, Ohio, industrial plant and will convert it for the manufacture of polyethylene film. . . . **DAYTON**

RUBBER CO., DAYTON PRODUCTS CO., Dayton, Ohio—Has named J. R. South product manager of the Urethane Dept. A L. Schriml has been named product-sales manager for the company's new line of Poly-V drives. . . . **CLARK EQUIPMENT CO.,** Battle Creek, Mich.—Has named B. E. Phillips acting general manager of the Industrial Truck Div. . . . **CHASE BAG CO.,** New York, N. Y.—Has named T. A. Eadon, Jr., sales manager of its New York sales department.

GEORGE W. ALEXANDER (left) has been appointed sales-promotion representative for Dow Corning Corp., Midland, Mich., and will work in the New York and Philadelphia areas. R. A. HAWORTH (center) has been named apparatus-sales manager for Cutler-Hammer, Inc., Milwaukee, Wis. MARVIN SCHRAM (right) has joined the Armour Chemical Div. as Southeastern sales representative with headquarters in Charlotte, N. C.

AVISUN CORP., Philadelphia, Pa.—Has named Dr. E. T. Severs product manager for films and E. M. Irish, Jr., product manager for polymers. . . . **ARMOUR CHEMICAL DIV., ARMOUR & CO.,** Chicago, Ill.—Has signed a manufacturing agreement with Chemical Development of Canada Ltd., and appointed its own Canadian sales representative, A. M. Stuart. . . . **AMERICAN PULLEY CO.,** Philadelphia, Pa.—Will build a one-story plant adjacent to its present plant in Philadelphia. . . . **AMERICAN ENKA CORP.,** New York, N. Y.—Has named S. W. Holmes merchandising director and Jay Kaner advertising and merchandising manager. . . . **AMERICAN CYANAMID CO., FIBERS DIV.,** New York, N. Y.—Has named John Lynch technical-sales representative in the company's home-furnishings department. . . . **CELANESE CORP. OF AMERICA,** New York, N. Y.—Has organized three new companies to administer the manufacture and marketing of its fiber, chemical, and plastics products. The companies, Celanese Fibers Co., Celanese Chemical Co., and Celanese Plastics Co., will function as operating divisions of the parent company.

ALLIS-CHALMERS MFG. CO., INDUSTRIES GROUP, Milwaukee, Wis.—Has named W. R. Greer sales representative in the Pittsburgh, Pa., district, T. A. Poulos sales representative in the Philadelphia, Pa., district, and J. L. Huprich sales representative in the Mid-Atlantic region. A. H. Grundy, Jr., and J. W. McNeil have been named to the Richmond, Va., district as sales representatives, and C. H. Honeycutt to the Charlotte, N. C., district. . . . **NATIONAL STARCH & CHEMICAL CORP.,** New York, N. Y.—Has bought Polimeros, S. A., manufacturer of vinyl acetate polymers, Mexico City. . . . **AMERICAN VISCOSE CORP., FIBERS DIV.,** Philadelphia, Pa.—Has named J. H. Anderer assistant manager of the applications-research and development section. . . . **AMERICAN SAFETY TABLE CO.,** Reading, Pa.—Has appointed G & G Sewing Machine Co., Scranton, Pa., exclusive representative in the Scranton and Wilkes-Barre areas. . . . **CARBIC COLOR & CHEMICAL CO., INC.,** New York, N. Y.—Has changed its name to Carbic-Hoechst Corp. . . . **EATON MFG. CO.,** Cleveland, Ohio—Has absorbed the organization of Gregg & Associates. The Gregg organization will handle Dynamatic's complete line. . . . **SEYDEL-WOOLLEY & CO.,** Atlanta, Ga.—Has named A. Welling LaGrone vice president.

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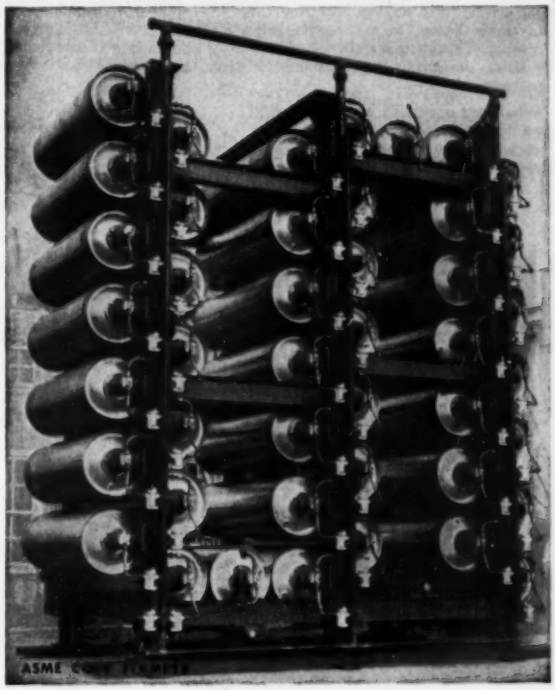

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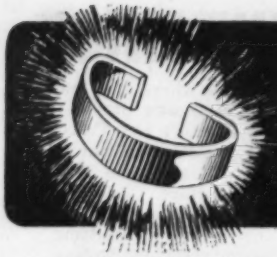

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NEWS ABOUT MEN

Robert A. Appleton has resigned as president of American Textile Co., Inc., Pawtucket, R. I.

Fred G. Barnet, Jr., has resigned as vice president of marketing of Fulton Cotton Mills, Atlanta, Ga.

George O. Belanger has been named director and president of Champlain Spinners, Whitehall, N. Y., succeeding his father, the late Theodore Belanger.

Thomas O. Boucher has been named to the board of directors of Johnson & Johnson, New Brunswick, N. J.

Lloyd B. Briggs has been promoted from assistant treasurer to treasurer of Albany Felt Co., Albany, N. Y., succeeding Charles H. Clifford, who has retired.

James Q. Brown has been named assistant superintendent of Roanoke Plant No. 2, J. P. Stevens & Co., Inc., Roanoke Rapids, N. C.

William H. Burton, Jr., manager of the Utica-Mohawk Group of the Cotton Div., J. P. Stevens & Co., Inc., has been named general manager of this group with plants in Clemson and Seneca, S. C.

Homer M. Carter has been named executive vice president of Pepperell Mfg. Co., New York, N. Y. He had been general manager of the Pepperell (Ala.) Div.

W. P. Creighton has been named chief chemist at Abbeville Mills Corp., Abbeville, S. C.

John E. Field, secretary and treasurer of Cone Mills, Inc., New York, N. Y., has been named a director of the company.

E. H. Fuller, superintendent of Roanoke Plant No. 2, J. P. Stevens & Co., Inc., Roanoke Rapids, N. C., has been named manager of the company's Rosemary plant, succeeding R. L. Rogers.

C. O. Graham has been appointed superintendent of Roanoke Plant No. 2, J. P. Stevens & Co., Inc., Roanoke Rapids, N. C., succeeding E H. Fuller.

Percy C. Gregory, Jr., vice president of Cone Mills, Inc., New York, N. Y., and executive vice president of the company's finishing division, has been named a director of the company.

M. M. Georgian has been promoted to technical superintendent of Drayton Mills, Spartanburg, S. C.

James Harrell, vice president of J. P. Stevens & Co.,

BURCH AULT has been appointed president of Burlington Industrial Fabrics So., a division of Burlington Industries, Inc., New York, N. Y. WILLIAM S. MANNING has been named a vice president of Burlington House Fabrics Co., a division of Burlington Industries, Inc., Burlington, N. C. He continues in charge of the company's manufacturing operations.

JOSEPH H. HAMILTON has been named president of Burlington Throwing Co., a division of Burlington Industries, Inc., High Point, N. C.

EDWARD WINSTON WEBB, JR., has been named manager of the cotton department of the P. H. Hanes Knitting Co., Winston-Salem, N. C.

Inc., New York, N. Y., has been named assistant officer in charge of the entire Cotton Div.

Virgil M. Harris has been named superintendent of Coosa Yarn Mills and Attalla Woolen Mills, Attalla, Ala.

O. H. Hawkins has been named superintendent of Park Yarn Mills, Kings Mountain, N. C., succeeding M. A. Enloe.

Wayne Hays has joined the chemical-engineering staff of The Kendall Co.'s Kendall Mills Div., Walpole, Mass. He had formerly been with Callaway Mills Co., LaGrange, Ga.

Edgar D. Hembree has been named manager of the Pelham, Ga., plant of Coats & Clark, Inc., New York, N. Y.

LYNDALL F. CARTER, grandson of the founder of The William Carter Co., Needham Heights, Mass., has been elected president of the company. He succeeds his father, the late Horace A. Carter.

William E. Jackson has been appointed plant manager of Taunton Dye & Print Works, Taunton, Mass.

Joe N. Jenkins, superintendent of the Pelzer Lower Plant of The Kendall Co., Pelzer, S. C., has been elected president of the Southern Textile Association.

C. B. Little, manager of manufacturing of The American Thread Co.'s Spun Synthetics Div., has been named coordinator of production, purchasing, and product development for this operation. The duties are in addition to those of manager of manufacturing.

William Lowndes, III, has been promoted from technical superintendent to products manager of man-made-fiber fabrics at Drayton Mills, Spartanburg, S. C.

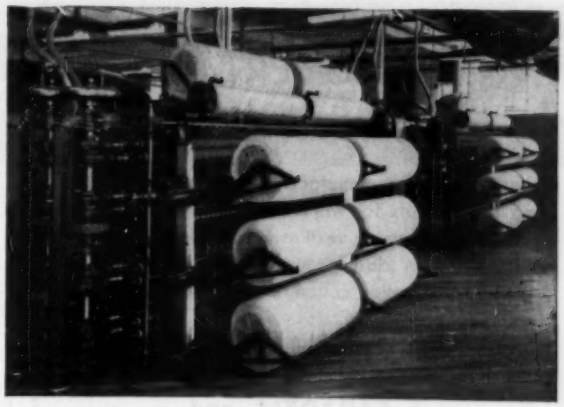
Robert M. McCrary, president and treasurer of Hart Cotton Mills, Tarboro, N. C., has been elected first vice president of the Southern Textile Association.

C. L. McLelland has been named manager of Knitcraft, Inc., Belmont, N. C.

John E. Meon has been promoted from vice president to executive vice president of Avondale Mills, Inc., Sylacauga, Ala.

M. G. Michael has been promoted to overseer of printing at the Ware Shoals, S. C., plant of Riegel Mfg. Co.

Lewis S. Morris, former



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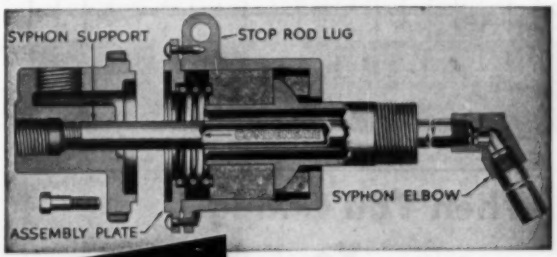

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secretary and assistant treasurer of Cone Mills Corp., Greensboro, N. C., has been named a director of the company.

Gilbert H. Robinson has resigned as president and director of Forstmann, Inc., a subsidiary of J. P. Stevens & Co., Inc., New York, N. Y.

Milton N. Rosenberg has been elected assistant secretary of M. Lowenstein & Sons, Inc., New York, N. Y.

Edward J. Schellenberg, Jr., has been named president of Atwater Throwing Co., a division of Hess, Goldsmith & Co., Inc., Plymouth, Pa.

James Weintraub has joined Raeford Worsted Corp., Burlington Industries, Inc., Raeford, N. C., as a vice president and manager of its Uniform Dept.

A. K. Winget, chairman of the board of American & Efird Mills, Inc., Albemarle, N. C., has retired.

PETER P. SHEA has been named president of the newly formed Goodall Vinyl Fabrics, Reading, Mass.

Harold Willingham has been promoted to assistant overseer of Clemson Fabrics at Excelsior Mills No. 2, Clemson, S. C.

James Yuill has been appointed president and director of Forstmann, Inc., a subsidiary of J. P. Stevens & Co., Inc., New York, N. Y. He succeeds Gilbert H. Robinson, who has resigned.

Textile World

OBITUARY

Joel Richard Abney, 63, retired textile executive, Greenwood, S. C.

Harvey T. Cross, 62, president of Hampton-Wrenn, Inc., Martinsville, Va.

Guy E. Curtis, 47, overseer at Limestone Mfg. Co., Gaffney, S. C.

John Clarence DeShields, 57, superintendent of weaving at Southern Worsted Co., Greenville, S. C.

Walter Fleisher, 82, retired worsted-yarn manufacturer and a former director of the old S. B. and B. W. Fleisher Co., Philadelphia, Pa.

J. Craig Johnson, 62, president of Johnson Hosiery Mills, Hickory, N. C.

Philip G. Lovell, 64, former vice president in charge of the Fairfax Dept. of Wellington Sears Co., New York, N. Y.

James F. Malcolm, 80, chairman of the board of Revonah Spinning Mills, Hanover, Pa.

Fletcher McAbee, 83, retired textile supervisor, Greenville, S. C.

Fred B. McFalls, 62, sales representative in North and South Carolina for Centrif-Air Machine Co., Atlanta, Ga.

Wert B. Rhyne, secretary and treasurer of four Rhyne mills, Cherryville, N. C.; president of Henry River Mfg. Co., Shuford Hosiery Mill, and Teague Hosiery Mill, Hickory, N. C.; and secretary and treasurer of Howell Mfg. Co., Cherryville, N. C.

Edward J. Schellenberg, 72, president of Atwater Throwing Co., Plymouth, Mass.

Matthew P. Whittall, 84, retired president of the former M. J. Whittall Associates, Worcester, Mass.

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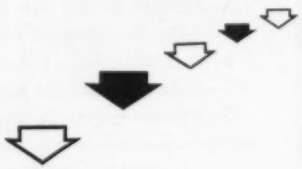

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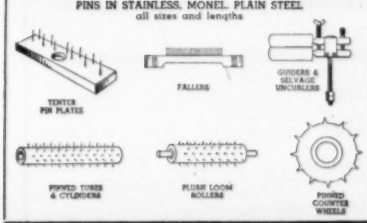

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Antara Chemical Div. General Aniline & Film Corp. 60
Armstrong Cork Co.28, 29, 151
Arnold, Hoffman & Co... 76
Ateliers Roannais de Constructions Textiles 98
Atkinson, Haserick & Co.. 109

Barber-Colman Co. Textile Div. 115
Beaunit Mills, Inc....123, 125
Bemis Bro. Bag. Co..... 32
*Booth, Benj 140
Bristol Co. 72, 73
Bristol Indl. Dev. Board.. 165

Celanese Corp. of America 126, 127
Charnwood Eng'g Co..... 111
Chemstrand Corp., The... 118
*Cocker Machine & Foundry Co. 30
*Continental-Diamond Fibre Div. The Budd Co. 162
Corn Products Sales Co.. 137

*Dary Ring Traveler Co... 172
Dayton Rubber Co., The Textile Div. 34, 35
Deutscher Spinnereimaschinenbau, Ingolstadt... 101
Diamond Crystal Salt Co 86, 87
Dow Chemical Co..68, 69, 119
Draper Corporation....11, 145
Dronsfield Bros., Ltd..... 117
Duesberg-Bosson of America, Inc. 173

Du Pont de Nemours & Co., E. I. Dyes & Chemicals Div. 81, 82
Durant Mfg. Co..... 166

Fabrionics Corp. 163
Fairbanks-Morse 20
*Faultless Caster Corp..... 152
Felters Co. 156
*Foster Machine Co..... 143
Foxboro Co. 80

Garland Mfg. Co..... 164
Geigy Dyestuff Div. of Geigy Chem. Corp. 79
General Tire & Rubber Co. Chemical Div. 95
*GPE Controls, Inc..... 150

Hubinger Co. 139
Hungerford & Terry, Inc.. 168

Industrie-Werke-Karlsruhe 107, 169

*Johnson Corp. 173

Kaiser Aluminum & Chemical Co. 147
Keever Starch Co..... 133
Kidde Tex. Machy. Corp. 135, 155

Laurel Soap Mfg. Co., Inc. 96
Link-Belt Co. 23
*Loper Co., Ralph E..... 174

*Main, Inc., Charles T.... 172
McBride Co., Inc., Ed. J.. 172
McLean Trucking Co..... 160
Minneapolis-Honeywell .. 90
Minnesota Mining & Mfg. Co. 128

*Monsanto Chemical Co.... 97
Morton Salt Co..... 78

*New Departure Div. General Motors Corp... 27
Norgren Co., C. A..... 159

Oakite Prods., Inc..... 170

Panolerias Espanolas 174
Putnam Chemical Co..... 83

*Reiner, Inc., Robert..... 21
Rhoads & Sons, J. E..... 158
*Robert & Co., Associates .....2nd Cover
Roberts Co. 12, 13
*Rohm & Haas Co..... 70

Sant' Andrea Novara..... 103
Scholler Bros. Inc..... 58
Shell Chemical Co..... 65
Shell Oil Co..... 25
Signode Steel Strapping Co. 26
*Sims Metal Works..... 171
*Societe Alsacienne de Constructions Mecaniques 109
*Sonoco Products Co..... 57
*Staley Mfg. Co., A. E.... 19
Stowe-Woodward, Inc. ... 154
Sulzer Bros., Ltd..... 113
*Supreme Knitting Machine Co., Inc. 161

*Tennessee Corp. 92, 168
Terrell Machine Co., Inc.. 16
Tessilmeccanica Lombarda 117
*Textile Machine Works... 38
Theiler Corp., H. J..... 105
*Thilmany Pulp & Paper Co. 167
Torrington Co., The (Bearings) 153
Toshin Kogyo Co. Ltd.... 84

*Universal Winding Co.... 130

*Veeder-Root, Inc. ...4th Cover

West Point Fdry. & Mach. Co. 36, 37
Whitin Machine Works... 40
Whitinsville Spinning Ring Co. 14
*Wiegand Co., Edwin..... 96
Wildman Jacquard Co.... 15
Wolf & Co., Jacques..... 94

CLASSIFIED ADVERTISING
F. J. Eberle, Business Mgr.

EMPLOYMENT OPPORTUNITIES 176

EQUIPMENT (Used or Surplus New) For Sale 176-18

ADVERTISERS INDEX

Advanced Textile Co..... 177
Allied Chemical Corp., National Aniline Div..... 176
American Air Compressor Corp. 179
American Enka Corp..... 176
Atkinson Spinning Co., Inc..... 177
Bialek & Co., Theodore..... 178
Blank Co., Inc., A & M..... 180
Bresani, Joseph, Mr..... 170
Fitzgerald, James E..... 176
Industrial Products of America 179
Interstate Textile Equipment Co., Inc. 179
Machinery Sales Corp..... 179
Mar-Day Textiles 179
McDowell Associates Inc..... 178
Mohawk Valley Knitting Machinery Co. 179
Pennsylvania Spool & Equipment Co. 178
Perry Equipment Co..... 178
Rabinowitz & Sons, Wm..... 177
Republic Textile Equipment Co. 180
Skelton Inc., H. C..... 176
Southern Textile Works..... 179
Stave & Kessler..... 176
Textile Auxiliaries Inc..... 180

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Records show that Allen-Bradley quality motor controls are real "moneysavers." Their consistent, trouble free performance reduces inspection and maintenance costs drastically.

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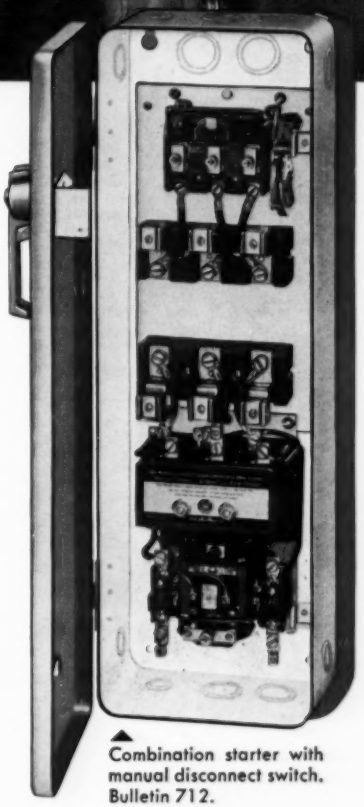
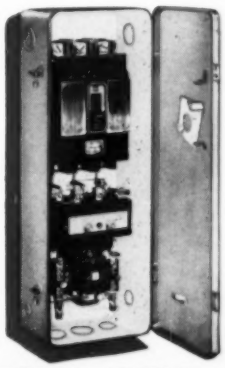
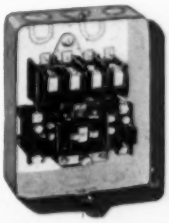


Combination starter with manual disconnect switch. Bulletin 712.



A-B combination starter with circuit breaker. Bulletin 713.

Manual starting switch in lint-tight enclosure. Bulletin 1209.



Automatic across-the-line solenoid starter. Bulletin 709.

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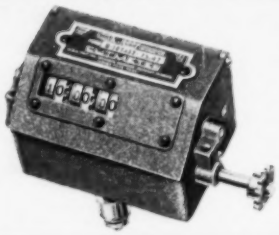
2-3-4 Pick, Hank, Yardage & Knitting Machine Counters:

These convertible counters record production separately for each of 2, 3 or 4 shifts, providing a basis for wage payment. Basic 2-shift counter can have 3rd and 4th shift counting units added right in the factory, on the machine, as needed.



Loom Cut Meters

AND PREDETERMINING COUNTERS:

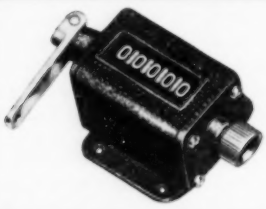
Cut Meters are predetermining counters for looms, for controlling lengths of cloth woven, without cut marks . . . and without over-runs and shortages. Also available are High Speed Predetermining Counters, both geared and ratchet types, to count any preset number of turns, strokes, pieces, lengths, etc.

Double-Wheel Measuring Counters:

Worm-driven Reset Counter at left registers linear units as friction wheels pass over the material. Medium speed range. Widely used in inspection.

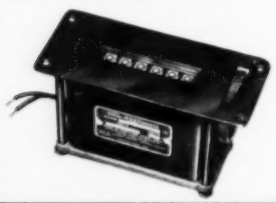
High Speed Reset Double Wheel Counter runs at speeds up to 6,000 rpm or 8,000 cpm.

Resets to zero with finger-flick.



Small Reset Counters:

Used on a wide variety of textile machines. Revolution or ratchet types, for speeds up to 1,000 counts per minute.



Reset Magnetic Counters:

Base mounted or panel mounted. Ruggedly built for speeds up to 1,000 counts per minute. Knob or lock-key reset.

Widely used for remote indication.

Vary-Tally:

This modern hand-operated counter, made only by Veeder-Root, is arranged compactly on stands in tiers. Can be supplied in any of 67 combinations up to 6 tiers high and 12 units wide. Entire row of counters is reset to zero with a turn of one knob.

Hosiery Dozens Counter:

Used in inspection, doffing or on knitting machines. Small figures show single-stocking count. Large figures indicate dozens of pairs up to 100. Hand, foot, or machine actuated.